Unit Seven: CERT Organization

I. Unit Overview and Objectives

A. Unit Overview

1. In previous units, you learned specific strategies and tasks to use in specific situations. In this unit, you will use that knowledge in a team environment, using the CERT organization as a foundation.

B. Objectives

1. By listening, participating and interacting in class activities, by the end of this unit participants should be able to accurately:

a. Describe the CERT organization.

b. Identify how individuals trained in CERT interrelate with the Incident Command System (ICS).

d. Explain CERT documentation requirements.

II. What is CERT and what does CERT do?

A. Community Emergency Response Teams are formed by community members and are designed to prepare individuals to help themselves, their families and neighbors in the event of a catastrophic disaster. CERT members receive basic training in disaster survival and rescue skills which improve the ability of citizens to survive until responders or other assistance arrives.

B. Emergency service capability can be greatly enhanced by well-organized, well-trained, and well-managed CERTs that are able to:

1. Prepare in advance of a disaster event.
2. Respond in their communities to address immediate needs brought about by the disaster.

C. As CERT members your role is to prepare for a disaster by:

1. Identifying potential structural and nonstructural hazards in your home and workplace.
2. Reducing the hazards to the degree possible before a disaster strikes.
3. Developing a disaster supply kit.

D. CERTs respond after a disaster by:

1. Locating and turning off utilities, if safe to do so.
2. Extinguishing small fires.
3. Deliver first aid to the injured until professional help arrives.
4. Conducting light search and rescue operations.
5. Helping disaster survivors cope with their emotional stressors.

E. The key CERT functions include:

1. Fire safety.
2. Medical operations.
3. Light search and rescue.
4. Effective disaster communication and psychology.

III. CERT roles in recent disasters

A. There are many instances of CERT members' participation in disaster response. During the Northridge Earthquake the following use of CERTs were recorded:

1. Search: 203
2. Rescue: 17
3. Medical treatment: 57
4. Patient transport: 4
5. Fire suppression: 5
6. Utility control: 156

B. In Alachua County, FL, during Hurricane Floyd in 1999 and during Tropical Storm Gordon in 2000, CERTs were called by the EOC to contact residents to ensure that they were aware of the approaching storms and to ascertain how public shelters and transportation could be made accessible to everyone in need in the community. The CERTs arranged transportation as necessary.

C. About a dozen CERTs were used during the Hidden Lake and Lake Louise fires in 2000 to provide food for the firefighters, move supplies, and assist with preparation in the area.

D. The CERT concept has extended from its original purpose as a response operation following catastrophic disasters. CERTs are now activated for a wide range of emergencies. For example, in Whatcom County, WA, CERT members were used in the following situations:

1. Whatcom Creek gasoline pipeline explosion (Olympic Pipeline)
2. Explosion at the Georgia-Pacific Pulp & Paper Mill
3. Y2K Emergency Operations Center activation
4. Sandy Point wind and flood event
5. Nisqually earthquake

CERT Roles in Recent Disasters (continued)

E. The CERT members who responded to the Whatcom Creek incident received The American Red Cross Real Heroes award for their contributions. CERT members in the county have received Federal, State, and local recognition for their response efforts.

F. CERT members also are a potential volunteer pool for the community. They can help with projects such as:

1. Distributing preparedness materials.

2. Staffing medical booths during special events.

3. Assisting with the installation of smoke alarms for community members requesting assistance in doing so.

G. Additionally, in his January 29, 2002, State of the Union address, the President asked that Americans volunteer their services to improve and safeguard our country. The three areas of emphasis for these volunteer efforts are crime, natural disasters, and terrorism. The Citizen Corps Program was created to help Americans meet this call to service. One of the volunteer opportunities offered to the American public under the Citizen Corps umbrella is the CERT program.

H. After completing initial CERT training, many CERT members seek to expand and improve their skills—through continuing CERT modules offered locally, courses offered through The American Red Cross, or programs from other sources. Some CERT members have sought additional training opportunities in:

1. Shelter management.
2. Community relations.
3. Donations management.
4. Special needs concerns.
5. Debris removal.
6. Utilities control.
7. Advanced first aid.
8. Automated External Defibrillator use.
9. CPR skills.

IV. Protection for Disaster Workers

A. As volunteers, CERT members functioning in emergency services are generally protected by "Good Samaritan" laws that protect people who provide emergency care in a prudent and reasonable manner.

B. In a disaster, CERT members are also protected by the Volunteer Protection Act of1997, a Federal law that protects volunteers from liability as long as they are acting in accordance with the training that they have received.

C. People who volunteer their services during a disaster are generally Protected by Federal, State, and/or local laws. Most States have "Good Samaritan" laws that protect people who provide emergency care in a prudent and reasonable manner to ill or injured persons. Other city, county, or State laws may also apply. Your instructor will provide information about laws that apply in your area. Record the key points below for future reference.

V. CERT Organization

A. Emergency on-scene management in a disaster situation is needed to:

1. Maintain the safety of disaster workers. CERT Incident Commanders must continually prioritize response activities based on the team's capability and training and the principle that rescuer safety is the number-one concern. CERT functional leadership assigns activities and accounts for team members. CERT team members work in the buddy system and respond based on their size-up of the situations that they encounter.

2. Provide clear leadership and organizational structure by developing a chain of command and roles that are known by all team members. Each CERT member has only one person that he or she takes direction from and responds to.

3. Improve the effectiveness of rescue efforts. Disaster information is collected and responses are prioritized based on rescuer safety and doing the greatest good for the greatest number according to the team's capabilities and training.

B. The need For CERT Organization – The specific CERT organizational structure now in use provides:

CERT Organization (Continued)

1. Common terminology that contributes to effective communication and shared understanding.

2.Effective communication among team members.

3. A well-defined management structure (e.g., leadership, functional areas, reporting chain, working in teams).

4. Accountability.

C. The CERT organization fulfills these requirements, and also has the advantage of:

1. Common terminology that contributes to effective communication and shared understanding.

2. Consolidated action plans that coordinate strategic goals, tactical objectives, and support activities.

3. Comprehensive resource management that facilitates application of available resources to the right incident in a timely manner.

4. A manageable span of control that provides for a desirable rescuer/supervisor ratio of between three and seven rescuers per supervisor.

D. Objectives of CERT Organization – In a disaster situation, CERT organization:

1. Identifies the scope of the incident. (What is the problem?)

2. Determines an overall strategy. (What can we do, and how will we do it?)

3. Deploys teams and resources. (Who is going to do what?)

4. Documents actions and results.

CERT Organization (Continued)

E. CERT organizational framework is flexible, it can expand or contract depending on the on-going assessment priorities determined by the IC, and people and resources available. This expansion and contraction helps ensure rescuer safety, doing the greatest good for the greatest number, manageable span of control and accountability of personnel.

F. Incident Command System – The Incident Command System (ICS) is the system used by fire and law enforcement agencies to manage emergency operations. When CERT members activate as a team for their neighborhood or workplace they become part of that system. By interrelating with ICS, CERT members who respond as a tem:

1. Are a part of the emergency management ICS.

2. Report to the first fire or law enforcement official at their location and take directions from that person until told that the command system has changed, or until relieved.

G. How ICS forms at the scene of an emergency or disaster – The basic ICS structure is established by the person who arrives first to the scene, who becomes the Incident Commander. Initially, the Incident Commander may handle all of the command positions shown in the visual, but as the incident evolves, may assign personnel as the:

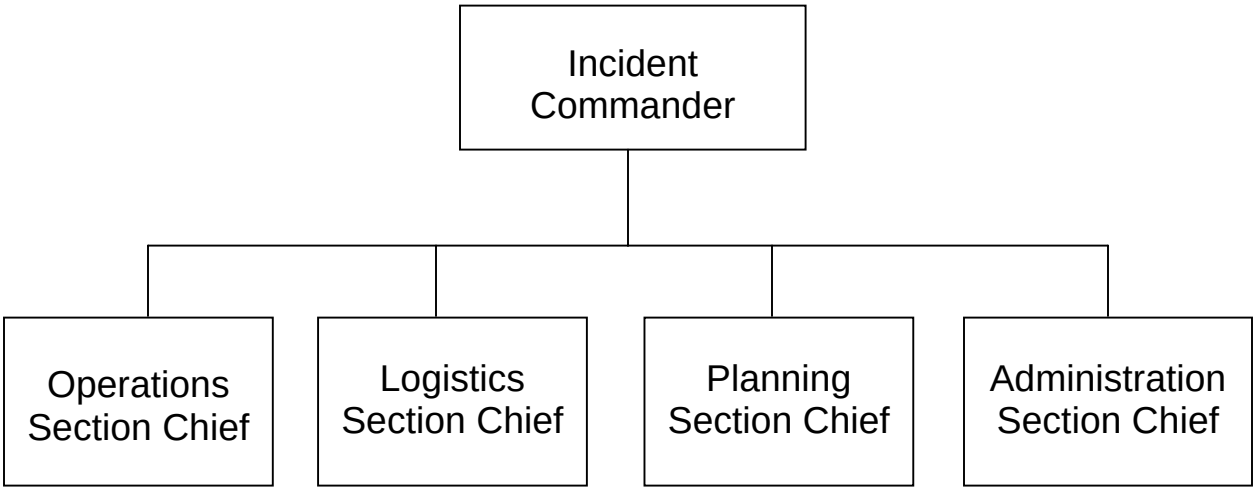
1. Operations Section Chief.

2. Logistics Section Chief.

3. Planning Section Chief.

4. Administration Section Chief.

Unit Seven: CERT Organization
Visual One: Incident Command System
Command Function Organization Chart



ICS Command Function Organization Chart

ICS Command Function Organization Chart, showing the Incident Commander at the top and the four Section Chiefs (i.e., Operations, Logistics, Planning, and Admin) reporting to the Incident Commander.

H. As the incident expands, it may be necessary to assign other personnel in each section to handle specific aspects of the response while maintaining an effective span of control.

VI. CERT Structure

A. The following points about CERT structure are important:

1. Each CERT must establish a command structure.

2. A CERT Leader—or, in ICS terms, Incident Commander—is appointed to direct team activities. For CERT volunteer activities and training, this person may be appointed. However, during activation for a disaster, this person is the first to arrive at a pre-designated staging area.

3. The location established by the CERT Leader as the central point for command and control of the incident is called the Command Post for the CERT. The IC stays in the command post. If the IC has to leave, the responsibility of IC must be delegated to someone in the command post.

4. The CERT Leader may appoint members to assist with managing resources, services, and supplies (logistics). CERT Leaders may also appoint members to collect and display information (planning/intelligence) and collect and compile documentation. To maintain span of control, this delegation occurs as the organization expands.

5. The CERT may operate as a single team that performs all activities as required, or may be divided into smaller teams (under Operations) of at least three people to achieve specific goals developed by the IC (e.g., fire suppression, medical, search and rescue), with a leader for each.

6. In all situations, each unit assigned must have an identified leader to supervise tasks being performed to account for team members, and to report information to his or her designated leader.

B. CERT personnel should always be assigned to teams consisting of at least three persons:

1. One person will serve as a runner and communicate with the Command Post.

2. Two people will “buddy up” to respond to the immediate needs.

C. The Logistics and Planning Sections may be expanded in the same way with:

1. Logistics including Service and Support units.

2. Planning including Situation and Status units.

VII. CERT Decision Making

A. CERT Mobilization – Following the incident, CERT members take care of themselves, their families, their homes, and their neighbors.

1. If the Standard Operating Procedure calls for self-activation, CERT members proceed to the pre-designated staging area with their disaster supplies. Along the way, they make damage assessments that would be helpful for the CERT IC's decision making.

2. The first CERT member at the staging area becomes the initial IC for the response. As other CERT members arrive, the CERT IC may pass leadership to someone more qualified. Otherwise, the CERT IC develops the organization to ensure effective communication, to maintain span of control, maintain accountability, and do the greatest good for the greatest number without placing CERT members in harm's way.

3. As intelligence (information) is collected and assessed, from CERT members reporting to the staging area, emergency volunteers, and reports from working teams [e.g., search and rescue] by the planning function, the IC must prioritize actions and work with the Section Chiefs or leaders. The CERT organization is flexible and evolves based on new information.

4. Following an incident, information and, therefore, priorities, may be changing rapidly. Communication between the IC and response teams ensures that CERT members do not overextend their resources or supplies.

B. Rescuer Safety

1. Effective emergency scene management requires the formulation and communication of strategic goals and tactical objectives that are based primarily on the safety of rescue personnel.

2. **Rescuer safety is paramount**. The question, "Is it safe for the CERT members to attempt the rescue?" is primary. The answer to this question is based mainly on the degree of damage to the structure.

CERT Decision Making (Continued)

Unit Seven: CERT Organization
Chart One: CERT Rescue Efforts Based On Degree Of Damage

Degree Of Damage	Should Rescue Be Attempted?
Heavy	No. Too dangerous to enter. Warn people to stay away.
Moderate	Yes, but perform only quick and safe removals; limit onsite medical care to checking for breathing, stopping major bleeding, and treating for shock. Minimize the number of rescuers inside the building.
Light	Yes. Locate, triage, and prioritize removal of victims to the designated treatment area.

CERT Decision Making (Continued)

Unit Seven, Chart Two: Strategies For Damaged Structures		
Light	**Moderate**	**Heavy**
Superficial damage, broken windows, fallen plaster, major damage is to contents of building.	Visible signs of minor structural damage; decorative work that is damaged or fallen; many visible cracks in plaster; building still attached to foundation; major damage is to contents of building.	Partial or total collapse of walls and/or ceilings; obvious structural instability; tilting; off foundation; heavy smoke or fire; gas leaks; hazardous materials inside; rising or moving water.
1. Secure building utilities (as needed). 2. Establish and coordinate search and rescue teams with medical triage personnel. 3. Establish "I" and "D" treatment areas. 4. **Primary Mission**: Locate, triage, and prioritize removal of victims to designated treatment area. 5. Continue evacuation process until all victims have been removed and accounted for. 6. Reassess structural stability and available resources for heavy rescue problems. Communicate and document location of trapped and/or missing persons to emergency personnel.	1. Secure building utilities (gas, electrical, water). 2. Gather information. 3. Establish control person at exit and entry points. 4. Establish and coordinate two- to four-person rescue teams. 5. **Primary Mission**: Locate, stabilize, and evacuate victims to a safe area minimizing number of rescuers in buildings. 6. Perform triage and other medical care in a safe area. 7. Continue rescuing lightly trapped victims until complete or not safe. 8. Continue size-up. 9. Communicate and document location of trapped or deceased.	1. Communicate the location and extent of damage to emergency services personnel. 2. Secure building perimeter and warn untrained and well-intentioned volunteers about danger and entry into building. 3. **Primary Mission**: From the exterior of the building, attempt to shut off gas (if it is possible and safe to do so). 4. Gather available information from survivors or witnesses for professional rescue teams.

Unit Seven: CERT Organization
Chart Three: Team Tasks Based On Damage Level

The extent of involvement for the various CERT functional teams varies depending on the level of damage encountered.

Light Damage

Fire	Search & Rescue	Medical	Treatment Area
-Shut off utilities as needed -Document	-Locate -Triage -Tag -Continue -Document	-Triage again -Head-to-toe in place -Treatment in place -Transport when necessary -Document	-Triage -Head-to-toe -Treatment -Document

Moderate Damage

Fire	Search & Rescue	Medical	Treatment Area
-Shut off utilities -Extinguish small fires to save lives -Document	-Locate -Stabilize (triage) -Evacuate -Warn others -Continue sizeup -Document	-Triage again in safe zone -Head-to-toe in safe zone -Tag -Treatment -Transport -Document	-Triage -Head-to-toe -Treatment -Document

Heavy Damage

Fire	Search & Rescue
-Shut off utilities is safe to do so -Document	-Warn others -Gather information -Document

Team Tasks Based On Damage Level

Tasks required of Fire, Search and Rescue, Medical, and Treatment Area teams based on the degree of damage to the structure.

CERT Decision Making (Continued)

VIII. Documentation

A. It is vital to document and communicate information about the disaster situation and resource status. Efficient flow of information makes it possible for resources to be deployed effectively and for professional emergency services to be applied appropriately. Under the CERT organization, each level of authority has documentation responsibilities:

1. Section Chiefs are responsible for providing the Command Post with ongoing information about damage assessment, group status, and ongoing needs.

2. The Command Post is responsible for documenting the situation status, including:

a. Incident locations.

b. Access routes.

c. Identified hazards.

d. Support locations.

B. Note that support locations include the:

1. Staging area.

2. Medical treatment and triage area.

3. Morgue, if there are fatalities.

C. This documentation must be provided to the first professional responders on the scene. This information is vital for tracking the overall situation.

D. Forms for Documentation – There are several standard forms that can be used to facilitate documentation and information flow. The following pages offer examples of forms for: damage assessment, personnel resources, equipment resources, incident briefing, message form, incident status, victim treatment area record.

Documentation (Continued)

Unit Seven: CERT Organization **Chart Four: Forms Used For Response Documentation**	
Form	**Purpose**
Damage Assessment Survey	• Completed by CERT leaders. Provides a summary of overall hazards in selected areas, including: o Fires. o Utility hazards. o Structural damage. o Injuries and casualties. o Available access. • Essential for prioritizing and formulating action plans.
Personnel Resources Form	• Completed by CERT members as they arrive at the Staging Area. Provides information about: o Who is on site? o When they arrived. o When they were assigned. o Their special skills. • Used by Staging personnel to track personnel availability.
Equipment Resources Form	• Completed by Logistics and Staging Area personnel to track the loan of equipment to CERT members.
Incident Briefing	• Completed by the Incident Commander (Team Leader) to identify damage, known hazards, and actions taken.
Message Form	• Used for sending messages between command levels and groups. Messages should be clear and concise and should focus on such key issues as: o Assignment completion. o Additional resources required. o Special information. o Status update.
Incident Status Record	• Used by the command post for keeping abreast of situation status. Contains essential information for tracking personnel assignments.
Victim Treatment Area Record	• Completed by Medical Treatment Area personnel to record victims entering the treatment area, their condition, and their status.

Documentation (Continued)

Damage Assessment Survey Form

Date: 10/20/01	Person Reporting: Carmen Garrido	Page #: 1
Time Received: 9:50	Person Receiving: Milton McDaniel	

Time	Location/Address	Fires		Hazards				Structures		People			Roads		/X
		Burning	Out	Gas Lead	H2O Lead	Electric	Chemical	Damage*	Collapsed	Injured	Trapped	Dead	Access	No Access	Assignment Completed
9:45	13267 Magnolia				X	X		M							X

FOR USE BY EVERYONE www.cert-la.com 10/08/05

Summary of all hazards in area - fill out this form on your way to Command Post and give it to Incident Command(* for structure damage: h=heavy, m=moderate, l=light).

Incident Command: Choose an incident, put a slash in the assignment completed column, copy the address/location to the incident name section on Incident Briefing, and give Incident Briefing and Assignment Status to incident team leader. Copy address/location to Post-Incident Status and enter start time. When incident is complete, put a backslash in the assignment completed column and the incident end time on the Post-Incident Status form.

Documentation (Continued)

Personnel Resources Form

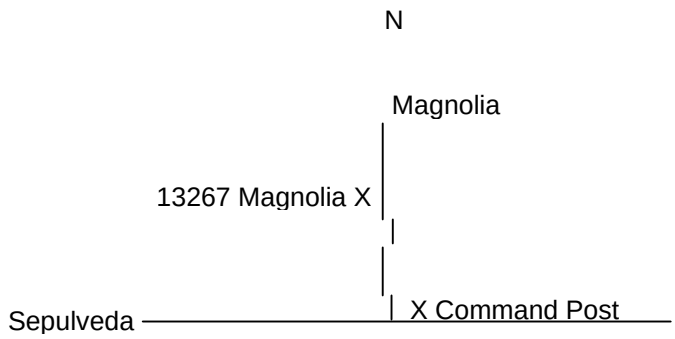
Date: 10/20/01	Person Reporting: Mary Smith							Page #: 1
Print Name and Time In								Skill Specialty Rank From 1-5 or Print "No"
Name	Time In	Time Assigned	Fire	Medical	S&R	Transport	Document	Other
Mary Smith	9:15	9:15						Personnel & Equipment Mgr.
Jim Cox	9:15	9:15						Incident Commander
Jerry Graczika	9:32	10:05	~~1~~	~~2~~	no	3	no	
Lola Lorenz	9:35	10:00	2	3	~~1~~	4	no	
Jose Marsh	9:43	10:05	~~2~~	~~1~~	4	3	no	radio
Kelly Jordan	9:45	10:00	3	2	~~1~~	4	5	
Dave Mesaros	9:50	10:00	~~1~~	~~2~~	3	4	5	
Sue Messar	9:50	10:00	1	no	~~2~~	3	no	
Patti Kalinquin	9:50	10:00	2	3	~~1~~	4	5	
Jeanine Cobbs	9:52	10:05	~~1~~	~~2~~	4	5	3	
Maria Amilcar	9:55	10:00	1	no	~~2~~	3	no	
Fred Williams	9:58	10:03	1	2	3	no	~~4~~	heavy equipment
Doak Marris	10:03	10:03	3	2	1	5	4	to Treatment Area
Leah Roberts	10:11		2	3	1	4	5	catering truck
Gretta Fritz	10:19		1	3	2	5	4	
Winston Basset	12:00		2	1	4	3	no	radio

FOR USE BY LOGISTICS AND STAGING www.cert-la.com 10/08/05

Have people sign in and mark their special skills. When you assign someone to a team, circle that team's box next to their name and enter the time assigned. When someone returns from an assignment, draw a line through their name and all boxes and have the person sign in again. Remember to check how long people have been assigned and who hasn't been assigned yet.

Documentation (Continued)

Incident Briefing Form

Prepared By: Bella Martin	Date: 10/20/01	Time: 9:50
Incident Name: 13267 Magnolia		
Map Sketch: 		
Current Organization:	Incident Commander: Bella Martin	Battalion: 8
Summary of Current Actions Be aware of hazards! Work as a team! Gas, electricity, water shut off. Found and removed 6 victims. 1 dead inside. Treated 1 minor, 3 delayed and 2 immediate. Transported 6 victims to treatment area, then transported 3 victims to Kaiser Hospital.		

FOR INCIDENT COMMANDER www.cert-la.com 10/08/05

Incident Command: Transfer an incident from Damage Assessment sheet. Sketch a map of the incident area, if known, with any hazards. Enter Incident Commander's name and Battalion number under current organization. Give to incident team leader with Assignment Status sheet.
Incident team leader: Sketch a map of the incident area with any hazards, if not done by Incident Command. Summarize the actions of your teams. When incident is complete, return this form, along with Assignment Status, to Incident Command.

Documentation (Continued)

Message Form

To: Logistics	Message Center Use Only
From: S&R 1	Incident: 13267 Magnolia
Time: 10:40	Time:_____
	Date: 10/20/01
	• Incoming
	• Outgoing

Message Text:
Found one person trapped.
Need 2 pry bars and enough cribbing for 2 supports, each 2 feet high
Action Taken:
Running short of cribbing.
Am sending 2 pry bars and 18" of cribbing, procuring more

USE CLEAR CONCISE TEXT www.cert-la.com 10/08/05

Examples: assignment completed, additional resources needed, unable to complete, special information/status update.

Documentation (Continued)

Incident Status Form

Date:	Person Reporting:		Page:
Address/Location	Assignment	Start Time	End Time
8203 Sepulveda	Ronald Charles	9:15	10:25
8203 Sepulveda	Vincent Jones	9:15	10:25
7212 Sepulveda	Eddie Thornton	10:00	
7212 Sepulveda	Sadie Morong	10:00	
7212 Sepulveda	Editha Fay Burns	10:00	

FOR INCIDENT COMMAND www.cert-la.com 10/08/05

You should record incident assignments from the Damage Assessment sheets. When incident is complete, enter end time and make a backslash for that incident on the Damage Assessment.

Documentation (Continued)

Victim Treatment Area Record Form

Date: 10/20/01	Person Reporting: Rich Richins				Page #:	
Time In:	**Name or Descriptio**	**Triage Tag**	**Condition**	**Moved To:**	**Time Out**
10:19	Rich Richins	D	Minor cut on forehead		
10:35	White male, about 45 years, balding, overweight	I	Deep cut on right thigh, unconscious, shock		
10:52	Willard Scott	D	Broken left arm, swollen left ankle	Kaiser	12:08
11:15	White female, blond, late 20's, pregnant	I	Unconscious, shallow breathing, shock	Kaiser	12:08
11:20	White female, 60s, "Annie"	I	Disoriented, large bump on forehead, shock	Kaiser	12:08
11:47	Jill Johns	D	Minor cuts and bruises, shock		

FOR MEDICAL TREATMENT AREA www.cert-la.com 10/08/01

Document each person brought to the treatment area.

If Victim Cannot Give Name, Write a Brief Description (e.g., Sex, Approximate Age, Hair Color, Race, etc).

Tag color: red=Immediate, yellow=Delayed, green=Minor, Black=Dead

Documentation (Continued)

IX. Activity: ICS Functions

A. Instructions:

Using your knowledge about the five ICS functions, decide under which function the following activities would fall. Some activities may involve more than one function to be completed.

Use the following key to fill in the blanks before each activity:

IC = Incident Commander
O = Operations
P = Planning
L = Logistics

1. _____ It's dark, all the lights are out, you need additional flashlights to continue your response.
2. _____ The designated first aid site has a downed power line.
3. _____ A neighbor reports the smell of gas in his house, but he cannot shut off the gas at the meter.
4. _____ The batteries for the portable radio are dead.
5. _____ The City wants to know the overall status of your neighborhood.
6. _____ Several of your neighbors have minor injuries and need first aid.
7. _____ Fire from another neighborhood is moving toward your neighborhood.
8. _____ There is a pit bull-type dog seen wandering near the first aid station.
9. _____ A news crew has arrived with a camera to film your activities.
10. _____ Two hysterical neighbors are demanding help. One cannot find her adolescent child who was playing outside when the disaster struck. The other wants help moving a bookcase off of his wife. He says she's bleeding from a wound on the head.
11. _____ It's starting to rain. Your command post and the first aid area are not under shelter.
12. _____ Too many people are coming to the Incident Commander to ask questions. The IC asks for someone to act as a "gatekeeper."
13. _____ There is a great increase of car and foot traffic through your neighborhood because other roadways are blocked
14. _____ The Incident Commander is very tired and is going to hand over responsibilities to someone else. She wants a report on the status of the neighborhood before doing so.
15. _____ Many neighborhood residents have come to volunteer their help.
16. _____ Reports have come in of damage and injuries in the next block. Teams must be assigned to assess the situation.
17. _____ A professional responder has arrived at the scene and would like a briefing on situation status.

X. Tabletop Exercise

A. Purpose: This exercise is an interactive tabletop activity that gives you an opportunity to apply what you have learned about team organization.

B. Instructions: To complete this exercise, follow these steps:

1. Work in your table group.

2. Read the scenario distributed by the instructor.

C. Remember that CERT command objectives are to:

1. Identify the scope of the incident.

2. Determine an overall CERT strategy.

3. Set priorities and deploy resources.

D. You will have 30 minutes to complete the exercise.

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.

2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to:

- Read and become familiar with Unit Eight: Disaster Communication before the next session.

End of Unit Seven

Unit Eight: Disaster Communication

I. Unit Overview and Objectives

A. Unit Overview

1. This unit will explore how the form and function of communication is impacted by the circumstances of a disaster.

2. Four major systems of communication (oral, written, non-verbal, and listening) can be utilized to express messages between people. This unit will examine when, where, and how reliance on these forms change and can be adapted to create clear messages.

3. Flexibility is key to effective disaster communication. Keeping messages simple, consistent, will be stressed in this unit. Additionally it will emphasize how communication should be based on the needs of the relationship between the survivors, responders and community experiencing the disaster.

B. Unit Objectives

1. By listening, participating and interacting in class activities, by the end of Unit Eight participants should be able to accurately:

a. Describe how a disaster can interrupt the taken-for-granted nature of personal communication networks.

b. List the four major types of communication that can be utilized during a crisis for the benefit of survivors, responders and the community.

c. Display an ability to be flexible in your communication form in order to get across simple messages in class activities that simulate disaster situations.

II. The forms and functions of communication during a time of disaster

A. In a time of disaster everything can be in a disastrous state:

1. the land
2. the community
3. family and friends
4. homes
5. access to food
6. access to cash or credit
7. transportation
8. employment
9. social services
10. the list is incomplete and can be quite lengthy . . .

B. Along with such concrete elements, intangible elements like personal communication networks are in disarray. Communications technologies such as phones, faxes and computer lines may easy to identify and repair; personal communication networks are not so easy to reestablish. People may or may not have access to their loved ones, and they usually don't have access to individuals who are not in their immediate family. Those people or groups are also an important way people gather and share information, on an informal everyday basis, consider:

Form and Function of Disaster Communication (continued)

1. a town hall meeting
2. friends you spoke to at work
3. the person from whom you bought morning coffee
4. the postal worker you said 'hello' to
5. the local man who caught you up on neighborhood gossip
6. your friends at the dog park
7. your book club
8. service or community organizations
9. religious or faith based communities
10. the list is incomplete and can be quite lengthy . . .

Individuals and groups with whom people engage in everyday talk are now displaced and the taken-for-granted nature of communication is exposed. In modern western culture people expect communication with family and friends as well as business and government to be immediate. A disaster destroys not only the technology that provides those services, but displaces people's interpersonal relationships.

This can place great stress on individuals as they attempt to understand the disaster and reconstruct the relationships of their daily lives.

C. Personal skills used by individuals may be interrupted by the disaster. Although training and preparation can help avoid personal injury during a disaster, physical harm can happen to anyone from a random person on the street to the most highly trained emergency management personnel. Imagine how you would have to adapt if your primary form of communication was no longer available to you (to either send or receive information). Consider:

- Loosing your voice (if you are a speaking person)
- Breaking your hands (if you use American Sign Language)
- Being separated from your interpreter (if you speak English as a second language)

Form and Function of Disaster Communication (continued)

Just like society takes for granted the instant nature of communication technology, most people take for granted that their primary form of personal communication will always be available and functional. Even more so, people often assume that others will adapt to them when communicating. Disasters can put everything in disarray, even a persons system of personal communication. Human bodies can get harmed, and with that physical systems of communication can falter and fail. Consider:

- What is your primary form of communication?
- How would you feel if it was no longer available to you?
- How might you adapt and communicate without it?

III. Four major systems of personal communication

Although there are many ways of communicating beyond the four covered in this chapter, these categories are detailed because they stress interpersonal communication skills. They are the type of communication skills most helpful for those interacting with others at the time of a disaster.

A. Oral communication (talk) uses sound to form words (then the words form sentences to express thoughts and ideas in spoken format). Many things can affect the use of oral communication such as culture, physical capacity, language and many other elements. Consider:

1. In Western cultures talk is viewed as desirable and people use it for social purposes and for performing tasks. Silence is considered a negative value. Westerners are more uncomfortable with silence and can find it awkward or embarrassing. When someone is silent people often interpret the behavior as a lack of interest, an unwillingness to communicate, hostility, shyness or a sign of interpersonal incompatibility.

2. In some other cultures talk is perceived differently, silence is more valued. Rather than base relationships on talk a talkative person is often considered a show-off or insincere. Remaining quiet is considered the proper state when there is nothing to be said.

Four Forms of Communication (continued)

3. Then there are those who do not have the physical capacity (or have limited capacity) for oral communication and use other means to communicate. In addition, rather than speech being an issue their primary language might be different from yours. Even a recent physical injury or illness can have a bearing on an individual's ability to effectively use oral communication.

4. These different views of talk and silence and the capacity for speech or language can lead to communication problems when people who utilize oral communication differently interact. Only when people recognize different standards of behavior can they adapt to one another or at least understand and respect their differences. Failure to recognize these differences can lead to unfortunate and unnecessary misunderstandings.

5. In a disaster those with CERT training may use oral communication to speak to individuals or small groups, it may be part of your triage assessment or how you provide feedback to members of the emergency management community.
   Tips for effective oral communication include:

   - Think before you speak; organize your thoughts.
   - Do not speak just to fill time
   - Be clear and concise
   - Articulate sounds
   - Regulate your tone and pitch as needed
   - Avoid using contractions and acronyms
   - Pay attention to how the receiver of your speech is responding and be willing and able to adapt to their needs, utilizing some other form of communication when it is necessary

Four Forms of Communication (continued)

B. Written Communication is the use of an alphabet to communicate by inscribing or engraving marks on some element; like putting pen to paper. Some written communication is formal such as report writing, other is informal, such as the use of notes or symbols, this unit will examine both.

1. Formal written communication is often one-way communication (communication without immediate feedback between the sender and receiver). For instance when a person writes a report and sends it off to another. In this case the writer may not have the ability to explain what she intended to the reader. The best writing is clear and simple to read. If sentences or paragraphs get too long, or if words are too sophisticated, meaning can be lost.

2. CERT members who work on a team will often have to report on their daily and weekly activities in written format. Keep these things in mind for more effective formal writing:

    - Keep sentences short
    - Paragraphs are limited to one topic only
    - Use fact not opinion
    - Do not infer; be direct
    - Be clear and concise
    - Do not use inappropriate language
    - Limit your use of acronyms
    - Your written material is public domain, be professional

3. Informal written communication can be either one-way or two-way communication. If written communication is two-way can involve immediate feedback between the sender and receiver of the communication. For example, writing someone a note with a check box next to his or her response options.

Four Forms of Communication (continued)

Informal written communication may be one-way as well. For example, recall the use of symbols in light search and rescue that indicate if someone is in the building, or has been removed from the premises

Because a disaster can impact a persons primary form of communication, or because many individuals do not utilize speech or have the capacity to hear, written communication may be used as a tool to substitute for speech.

4. Consider the following application for informal written communication during a disaster. Someone you find during light search and rescue cannot speak. One way to assess if she is hurt is to write the word 'HURT?' and show it to her. If she can read English she may be able to point to where her pain is located. When using informal written communication keep in mind the following:

    - Bring something to write with to CERT events

    e.g. Magic Markers, Sharpie Markers, Pencils, Chalk

    - Be flexible and adaptable with writing instruments

    If you need to, write in the dirt with a stick,
    Use lipstick or grease on a table to write with

    - Keep written communication short

    'HURT?' is more efficient than 'can you tell me if you are hurt?'
    'WHERE?' is more efficient that 'please point to the location of your pain'

C. Non-verbal Communication – Messages expressed by means other than spoken words are considered non-verbal or visual communication. A person's sight must be functioning to perceive visual communication (such as insignias, color or gestures) or the visual communication can be explained, described or perceived by other feedback forms.

1. Visual communication can include
    - How a person is dressed
    - How space is used while communicating
    - Use of color
    - Body gestures

Four Forms of Communication (continued)

2. Non-verbal communication does not need sight to be perceived, it can include:
   - The use of time
   - How a voice tone is regulated or accented
   - How fast or slow a person speaks
   - The use of touch

3. Consider the following application for visual communication during a disaster. Someone you find during light search and rescue is hurt but cannot speak One way to assess his pain is to use the Wong-Baker FACES pain rating scale[1] (found on the following page).

   This is a pain scale utilized by the medical profession. It uses a rating system from of either 1-5 or 1-10 to assess patient pain (1 = low pain through 10 = extreme pain).

   Rather than words, it uses symbols of faces. It has application for children who may not have the articulation skills to express pain levels, people who do not speak English as their first language, individuals who have temporarily lost their speech, or with people who do not speak.

[1] http://www3.us.elsevierhealth.com/WOW/ (accessed September 6, 2005)

Wong, D.L., Hockenberry-Eaton, M., Wilson, D., Winkelstein, M., Schwartz, P.: Whaley and Wong's Essentials of Pediatric Nursing, 5th edition, St. Louis, 2001, Mosby, p. 1301.

Wong, D.L., Hockenberry-Eaton, M., Wilson, D., Winkelstein, M.L., Ahmann, E., DiVito-Thomas, P.A.: Whaley and Wong's Nursing Care of Infants and Children, 6th edition, St. Louis, 1999, p. 2040.

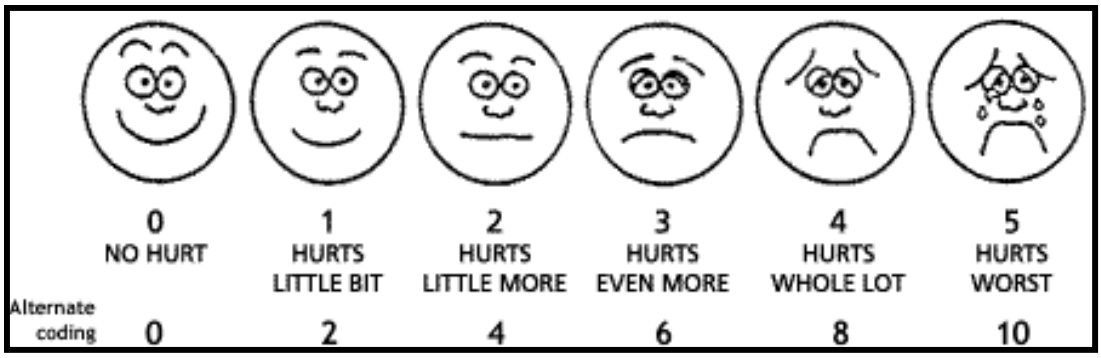
Wong, D.L. & Hess, C.S.: Wong and Whaley's Clinical Manual of Pediatric Nursing, 5th edition, St. Louis, 2000, Mosby, p. 326.

Wong, D.L.: Pediatric Quick Reference, 3rd edition, St. Louis, 2000, Mosby, p. 24

Four Forms of Communication (continued)

Unit Eight: Disaster Communication

Chart One
Wong-Baker FACES pain rating scale



The Wong-Baker FACES pain rating scale uses symbols of faces that range from #1 a smiling face, through #5 a frowning face with tears coming from the eyes. People in pain are shown the chart and then are expected to point to the face that most represents their level of pain at the time. The chart also offers alternate coding so a pain scale of 1 through 10 may be substituted.

Four Forms of Communication (continued)

D. Listening is a form of communication that consists of several elements attending, understanding, responding and remembering.

1. Attending is a psychological process. For some it is the act of hearing a message, for others it is the process of receiving a message in a visual format (like sign language). People would go crazy if they attended to every sound or gesture in the environment, so they filter out some messages and attend to others (listen to them). Some messages are filtered for people by not speaking clearly or having a face blocked so lips cannot be read.

2. Understanding occurs when people make sense of a message. It is quite possible to hear and attend to a message without understanding it at all.

3. Responding to a messages means the listener has given observable feedback to the speaker. This can mean keeping eye contact, reacting with facial expressions, giving verbal feedback such as asking questions or exchanging ideas.

4. Remembering is the ability to recall information. People often don't remember what they listened to because it is of little interest to them, they are preoccupied, have message overload or make assumptions about where the conversation is going.

E. Improving Listening - Listening is not like breathing (an activity we do well naturally) it takes much practice to become a skill we do well. Listening can be improved through instruction and training. Here are some guidelines to better listening.

1. Talk less – you were given two ears and one mouth and should use them accordingly. Many people make the mistake of shifting a conversation to their ideas. Good listeners do exactly that; they listen! Have your focus on the person you are gathering information from.

2. Get rid of distractions – this includes internal preoccupations as well as external noise. Do everything you can to focus on the message of the sender.

Four Forms of Communication (continued)

3. Don't judge prematurely – many people form snap judgments and evaluate others before hearing them out. Make sure you permit the sender to get all their relevant information out before you evaluate it.

There are great rewards to listening effectively. Although it takes a considerable amount of effort to listen well, getting clear and accurate information from disaster survivors is imperative to the role CERT trained individuals and teams.

IV. Exercise

Work with a partner or small group for this activity (3-4 people)

Take turns changing roles between being the community member and CERT responder.

- Have one person assume the role of an individual who is hurt because of the disaster. This person must communicate their pain to the respondent; practice doing this in several ways. First do not use your primary form of communication (e.g. if you speak, do not do that. If you use sign language, do not use that, etc.).

- The goal of the listener respondent is to accurately access the condition of the person pretending to be hurt.

- You can make this activity more complex by changing what the person is trying to communicate. Rather than identifying pain, the person could attempt to tell the responder someone is caught in rubble, separated from their family or in need of medication.

- After the activity is complete, spend time with your partner or group deconstructing the process of communicating under these circumstances. What was the process like? How long did it take you to understand one another? When the pain or circumstances were more complex, how did that impact your ability to communicate?

Keep the following communication tips in mind

- Flexibility is key to effective disaster communication.
- Keep messages simple and consistent.
- Communication should be based on the needs of the relationship between the survivors and responders.

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.

2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to:

- Read and become familiar with Unit Nine: Disaster Psychology before the next session.

End of Unit Eight

Unit Nine: Disaster Psychology

I. Unit Overview and Objectives

A. Unit Overview

1. This unit on disaster psychology will examine the psychological impact of a disaster on rescuers and victims and provide suggestions on how to offer "psychological first aid." It will focus on caring for yourself, your colleagues and survivors of disasters and address techniques for managing one's personal situation so that the needs of the victims and those of CERT team members can be met.

2. CERT members should prepare themselves for their role during and following a disaster by learning about the possible impact of disaster on them and others, emotionally and physically. This knowledge will help CERT members understand and manage their reactions to the event and to work better with others.

B. Objectives

1. By listening, participating and interacting in class activities, by the end of this unit participants should be able to accurately:

a. Describe the disaster and post-disaster emotional environment.

b. Identify the steps that rescuers can take to relieve their own stress

c. Recognize how stress and trauma manifests differently in members of a diverse community.

II. Individual Well Being

A. Vicarious Trauma – During a disaster, you may see, smell or hear things that will be extremely unpleasant. Even if you don't experience such events first hand, you will likely interact with others who have. This can turn from empathy to **Vicarious Trauma** which is a process of over-identifying with survivors (almost to the point of taking on their burdens as your own). It is an "occupational hazard" for helpers. Taking ownership of others' problems will compound your stress and affect the overall effectiveness of response and recovery teams.

B. Signs of Stress or Trauma – Be alert to **psychological (emotional) and physiological (physical) signs** of disaster trauma in yourself, as well as in disaster victims, so that you can take steps to alleviate stress.

1. Psychological symptoms may include:

   - Irritability or anger.
   - Self-blame or the blaming of others.
   - Isolation and withdrawal.
   - Fear of recurrence.
   - Feeling stunned, numb, or overwhelmed.
   - Feeling helpless.
   - Mood swings.
   - Sadness, depression, and grief.
   - Denial.
   - Concentration and memory problems.
   - Relationship conflicts/marital discord.

Individual and Team Well-Being (Continued)

2. Physiological symptoms may include:

- Loss of appetite.
- Headaches or chest pain.
- Diarrhea, stomach pain, or nausea.
- Hyperactivity.
- Increase in alcohol or drug consumption.
- Nightmares.
- The inability to sleep.
- Fatigue or low energy.

C. Individual Stress Reduction Activities – You should spend some time thinking about other ways to reduce stress personally. Only you know what makes you able to reduce stress within yourself. Expending the effort required to find personal stress reducers is worthwhile before an incident occurs. You can take the following preventive steps in your everyday life:

1. Get enough sleep.
2. Exercise.
3. Eat a balanced diet.
4. Balance work, play, and rest.
5. Allow yourself to receive as well as give. Remember that your identity is broader than that of a helper.
6. Connect with others.
7. Use spiritual resources.
8. Experienced rescue workers find these steps helpful in controlling their stress levels, but, in some cases, it might be necessary to seek help from mental health professionals.

Individual and Team Well-Being (Continued)

III. Team Well Being

C. The role of the team leader in team well being – If you work as part of a CERT team there are steps that CERT **team leaders** can take to promote team well-being before, during, and after an incident:

1. Provide pre-disaster stress management training to all CERT personnel.

2. Brief CERT personnel before the effort begins on what they can expect to see and what they can expect in terms of emotional response in the survivors and themselves.

3. Emphasize that the CERT is a team. Sharing the workload and emotional load can help defuse pent-up emotions.

4. Encourage rescuers to rest and re-group so that they can avoid becoming overtired.

5. Direct rescuers to take breaks away from the incident area, to get relief from the stressors of the effort.

6. Encourage rescuers to eat properly and maintain fluid intake throughout the operation. Explain that they should drink water or other electrolyte-replacing fluids, and avoid drinks with caffeine or refined sugar.

7. Rotate teams for breaks or new duties (i.e., from high-stress to low-stress jobs). Team members can talk with each other about their experiences. This is very important for their psychological health.

8. Phase out workers gradually. Gradually phase them from high- to low-stress areas of the incident.

9. Conduct a brief discussion (defusing) with workers after the shift, in which workers describe what they encountered and express their feelings about it.

10. Arrange for an informal debriefing or Critical Incident Stress Management professional (CISM) to conduct a Critical Incident Stress Debriefing (CISD).

IV. Critical Incident Stress Debriefing

A. CISD is one type of intervention system that is based on a careful assessment of the needs of a group (or sub-groups within a larger organization). A CISD is a formal group process held between 1 to 3 days after the event and is designed to help emergency services personnel and volunteers cope with a traumatic event.

B. CISD should not be used as a stand-alone intervention it should be used in conjunction with other types of intervention (such as: personal stress reduction techniques, informal debriefings, or professional longer term counseling).

C. Participation in CISD should be voluntary.

D. To schedule a CISD, you should contact the Red Cross, local emergency management agency, or community mental health agency. You could also ask your local fire or police department for help in contacting the appropriate person.

E. A CISD has seven phases:

1. Introductions and a description of the process, including assurance of confidentiality
2. Review of the factual material about the incident
3. Sharing of initial thoughts/feelings about the incident
4. Sharing of emotional reactions to the incident
5. Review of the symptoms of stress experienced by the participants
6. Instruction about normal stress reactions
7. Closing and further needs assessment

V. Understanding and Working with Disaster Survivors

A. People who and organizations that respond to disasters need to have an understanding about how people might react to the event. Just as people are vastly different, so are their reactions. In this section of the Disaster Psychology unit the material explored includes: defining disasters, disaster mythology, general patterns of behavior in disasters, social location and special communities, dealing with traumatic stress and, responses to disaster survivors.

1. **What is a Disaster?**

a. It is important that CERT trained individuals understand that a disaster is different than an emergency. Generally an emergency, even a major emergency, can be handled by local or regional emergency management personnel. Such organizations are adequately prepared to deal with the short term and long-term demands of an emergency. An emergency may be overwhelming in a temporary sense, a disaster is quite different.

b. Charles Fritz a groundbreaking researcher of disasters indicates a disaster is unusual and catastrophic. A disaster is either due to accidental or hard to control events society or a self-sufficient subdivision of society undergoes after an incident that disrupts all or some of the essential functions of that society.[1]

2. **Disaster Mythology**

a. If you watch television or movie portrayals of people reacting to disasters you have seen disaster mythology represented. Hysteria, widespread irrational activity and dysfunctional behavior may be what can 'sell the story' but they are not factual.

b. Disaster myths that assume that the norms that govern individual and social behavior collapse during a disaster have been proven wrong by many researchers and teams

[1] Fritz, Charles E. 1961. "Disasters." Pp. 651-694 in *Contemporary Social Problems,* Robert K. Merton and Robert A. Nisbet (eds.). New York: Harcourt.

Understanding and Working with Disaster Survivors

c. Researchers have classified some of most common **disaster myths**[2]:

- Panic Flight – people fleeing in horror
- Looting – people stay in peril to protect or steal property
- Price Gouging – local merchants charging exorbitant fees for essential items
- Contagion – people get caught up in selfish frenzy, then lose control and behave as a mob
- Martial Law – is commonly declared to restore or maintain order in the community
- Psychological Dependency – survivors are too traumatized to function and must depend on outsiders
- Disaster Shock – survivors are so incapacitated they can't function in the most simple ways
- Evacuation Behavior – crazed crowds pushing and shoving and walking or driving over others
- Shelter Use – the primary place of choice for evacuees are over-crowded and under-supplied
- Death, Injury & Damage Estimates – are dramatically high and grotesque

While these behaviors infrequently happen to individuals, they are RARE OCCCURANCES, but get undue media attention because they are dramatic. Media looking for the most striking stories help create and perpetuate the myths.

[2] Fischer, III, Henry W. 1998. *Response to Disaster: Fact Versus Fiction & Its Perpetuation The Sociology of Disaster*. 2nd Edition. University Press of America, Lanham, Maryland.

Understanding and Working with Disaster Survivors (Continued)

3. **General Patterns of Behaviors in Disasters**

Although the makers of the 'movie of the week 'and tabloid reports create images of hysteria and selfishness in survivors, the actual patterns of behavior of individuals and communities after disasters hit are in sharp contrast to such myths. General patterns of personal and community behavior following disasters include:

a. If disaster warnings are clear, continual, from knowledgeable sources and consistent for the environment they live in, people will evacuate when requested[3].

b. Remaining calm[4]

c. Do not panic[5]

e. Altruism (unselfish and philanthropic behavior)[6]

f. Want to observe and personally survey the damaged area (especially around their home or business)[7]

g. Behave normally, rationally and are the first to respond to their own needs and the needs of their neighbors[8]

h. Tell their 'story' of the disaster (many times to many listeners as an act of constructing and understanding the experience as well as to reestablish control).[9]

i. become active in political processes that are a part of the long-term recovery activities[10]

---

[3] Perry, Ronald W., Michael K. Lindell, and Marjorie R. Green. 1982. "Crisis Communications: Ethnic Differentials in Interpreting and Acting on Disaster Warnings." *Social Behavior and Personality* 10 (No. 1): 97-104.

[4] Ibid

[5] Ibid

[6] Glassheim, Eliot (Ed.), 1999. *Voices from the Flood: An Oral History of the 1997 Flood of the Red River of the North.* North Dakota Museum of Art, Grand Forks, ND.

[7] Fischer, III, Henry W. 1998. *Response to Disaster: Fact Versus Fiction & Its Perpetuation The Sociology of Disaster*. 2nd Edition. University Press of America, Lanham, Maryland.

[8] Ibid

[9] Glassheim, Eliot (Ed.), 1999. *Voices from the Flood: An Oral History of the 1997 Flood of the Red River of the North..* North Dakota Museum of Art, Grand Forks, ND.

[10] Rakow, Lana. 2004. "The Talk of Movers and Shakers: Class Conflict in the Making of a Community Disaster." *The Southern Journal of Communication.*

Understanding and Working with Disaster Survivors (Continued)

4. **Social Location and Special Communities in Disasters** – People's needs and capabilities are affected by their locations within a society. Location just doesn't refer to physical location (such as the difference between living on a hill or by the river of a flood prone community) it refers to social location as well. Social location refers to your place or position in a society. Consider the following if a hurricane hit a community and you were:

- On vacation from another state
- Did not speak English as your first language
- Living paycheck-to-paycheck in a rental unit that was destroyed
- Just moved to the area and started a new job
- Recovering from a broken leg and were using a wheelchair
- Para Olympics wheelchair sprint champion
- Retired and lived on social security
- Retired and wealthy
- A single parent of three children who was the sole earner for the family

a. Disaster researchers Enarson and Morrow indicate that when members of a community have to deal with issues like restricted housing choices, migration, poverty and other limits to choice they experience risk and disaster differently than those with economic, political or social means.[11]

b. <u>The space and place people occupy in a society can cause them to have vastly different experiences in the same disaster</u>. Trained responders should anticipate interacting with special communities of people in need at each disaster.

[11] Enarson, Elaine, Betty Hearn Morrow. 1998. *The Gendered Terrain of Disaster: Through Women's Eyes.* Praeger, Westport, Connecticut.

Understanding and Working with Disaster Survivors (Continued)

c. One special community you may encounter in a disaster might be the elderly[12]. Some elderly citizens experience depression, trauma and death not directly due to the disaster, but because their 'taken-for-granted' life in the pre-disaster phase is so disrupted and cannot be restored in the post disaster period. Disaster research has indicated that older members of society will experience disasters differently due to their social isolation, personal situations and limited access to information.

i. Information limitations may include[13]:
- Lack of access to electronic communication tools (e-mail, web access)
- Lack of access to written communication forms (due to weakening eyesight)
- Lack of access to public space and the information sharing that takes place there (due to limited personal mobility, or not able to drive a vehicle)

ii. Social Isolation issues may include[14]:
- Limited personal support systems (due to distance from friends and family, death of friends, family or spouse-partners)
- Limited social support systems (secondary sources of information such as from religious organizations or senior centers are often short of volunteers during a crisis)

iii. Personal situations may include[15]:
- Financial constraints (income dependent on retirement, pension or social security)
- Physical constraints (health related to aging – elderly people may be home bound or unable to travel distances to disaster recovery centers).

[12] Hewitt, Kenneth. 1995. "Excluded Perspectives in the Social Construction of Disaster." *International Journal of Mass Emergencies and Disasters, 13, : 317-340.*
[13] Hooper, Pattijean, Kathleen Fearn-Banks, 2005. "Finding Milton Wright: How Public Relations Disaster Campaigns Impact the Elderly." *The Journal of Promotions Management.*
[14] Ibid
[15] For elderly, a flood's toll continues to rise. (Nov. 6, 1997) *The New York Times*. p. A36.

Understanding and Working with Disaster Survivors (Continued)

v. Disaster recovery personnel need to consider the following demographic information and special susceptibilities when dealing with elderly populations[16]:

- During the 20th century the number of persons over sixty-five has tripled and are about 15% of the whole U.S. population[17] That number will grow.
- About 31 percent of all elderly live alone; four-fifths of these are women[18].
- The poverty rate rises with age; 16% of people over seventy- five live in poverty.[19]
- 1.4 million children are being raised by their grandparents in the United States, this trend is increasing and the possibility exists that children and older adults may occupy the same space in a home.
- Sensory deprivation is increased in older adults.
- Some older people have delayed responses because of age related slowing cognitive and motor activities.
- Chronic Illness and dietary considerations can cause communication and health problems.
- Multiple loss effects (loss of spouse, income, home, physical capabilities) may make disaster recovery more difficult.
- Welfare stigma and unfamiliarity with bureaucracy may cause older adults to be reluctant to seek support from public disaster recovery agencies.

---

[16] Oriol, William . "*Psychosocial Issues for Older Adults in Disasters*" Substance Abuse and Mental Health Services Administration Center for Mental Health Services. DHHS Publication No. ESDRB SMA 99-3323

[17] "*Sixty-Five Plus in the United States.*" Washington, D.C.: Bureau of the Census Statistical Brief, May 1995

[18] Ibid

[19] "*Aging into the 21st Century,*" Washington, D.C.: National Aging Information Center, Administration on Aging, 1996.

Understanding and Working with Disaster Survivors (Continued)

- Hyper/hypothermia vulnerability makes elderly more at risk during disasters that involve extreme temperatures.

- Transfer trauma - Elderly who need to be evacuated or permanently moved from their residences may experience stress and disorientation.

- Language and cultural barriers can cause confusion and exasperation at relief centers or with interactions with disaster relief workers. Native Americans have unique cultural traditions; bilingual and bi-cultural concerns need to be addressed with the elderly.

iv. The Voices of Wisdom videotape, part of Project Cope[20] offers older adults recovering from a major disaster the following advice:

- Physical reactions to a disaster are normal.

- Acknowledging our feelings helps us recover

- Asking for what we need can help heal us.

- Focusing on our strengths and abilities will help.

- Accepting help from community programs is healthy.

- We each heal at our own pace.

- We each have different needs and different ways to cope.

- Older adults have many experiences that may be of help to the recovery efforts of individuals and the community.

- Older adults may be potential volunteer workers and service to the community which may help them heal and feel a greater sense of community.

[20] Project COPE. “Voices of Wisdom Videotape and Brochure.” Ventura County, California, 1992

Understanding and Working with Disaster Survivors (Continued)

v. The Center for Mental Health Services[21] offers the following principles to support the above stated. While it is not practical for CERT members to deliver all of the suggested services, it is none-the-less important for you to know these services may be required and refer community groups or government agencies to older citizens in need:

- Provide strong and persistent verbal reassurance.
- Assist with recovery of physical possessions; make frequent home visits; arrange for companions.
- Give special attention to suitable residential relocation, ideally in familiar surroundings with friends or acquaintances.
- Help re-establish medication regimes.
- Provide escort service.

d. Another special community you may encounter in disasters might be children. Natural disasters can leave children feeling frightened, confused, and insecure. Whether a child has personally experienced trauma or has merely seen the event on television or heard it discussed by adults, it is important for parents and teachers to be informed and ready to help if reactions to stress begin to occur.

Children respond to trauma in many different ways[22]. Some may have reactions very soon after the event; others may seem to be doing fine for weeks or months, and then begin to show worrisome behavior. Knowing the signs that are common at different ages can help parents and teachers to recognize problems and respond appropriately.[23]

---

[21] Oriol, William . "*Psychosocial Issues for Older Adults in Disasters*" Substance Abuse and Mental Health Services Administration Center for Mental Health Services. DHHS Publication No. ESDRB SMA 99-3323

[22] http://www.fema.gov/kids/tch_diz.htm

[23] http://www.mentalhealth.samhsa.gov/publications/allpubs/KEN-01-0093/default.asp

Understanding and Working with Disaster Survivors (Continued)

i. Preschool Age – Children from one to five years in age find it particularly hard to adjust to change and loss. In addition, these youngsters have not yet developed their own coping skills, so they must depend on parents, family members, and teachers to help them through difficult times.

Very young children may regress to an earlier behavioral stage after a traumatic event. For example, preschoolers may resume thumb-sucking or bedwetting or may become afraid of strangers, animals, darkness, or "monsters." They may cling to a parent or teacher or become very attached to a place where they feel safe.

Changes in eating and sleeping habits are common, as are unexplainable aches and pains. Other symptoms to watch for are disobedience, hyperactivity, speech difficulties, and aggressive or withdrawn behavior. Preschoolers may tell exaggerated stories about the traumatic event or may speak of it over and over.

ii. Early Childhood – Children aged five to eleven may have some of the same reactions as younger boys and girls. In addition, they may withdraw from play groups and friends, compete more for the attention of parents, fear going to school, allow school performance to drop, become aggressive, or find it hard to concentrate. These children may also return to "more childish" behaviors; for example, they may ask to be fed or dressed.

iii. Adolescence – Children twelve to fourteen are likely to have vague physical complaints when under stress and may abandon chores, schoolwork, and other responsibilities they previously handled. While on the one hand they may compete vigorously for attention from parents and teachers, they may also withdraw, resist authority, become disruptive at home or in the classroom, or even begin to experiment with high-risk behaviors such as drinking or drug abuse. These young people are at a developmental stage in which the opinions of others are very important. They need to be thought of as "normal" by their friends and are less concerned about relating well with adults or participating in recreation or family activities they once enjoyed.

Understanding and Working with Disaster Survivors (Continued)

In later adolescence, teens may experience feelings of helplessness and guilt because they are unable to assume full adult responsibilities as the community responds to the disaster. Older teens may also deny the extent of their emotional reactions to the traumatic event.

iv. How to Help[24] –Provide children with opportunities to talk about what they are seeing on television and to ask questions.

- Don't be afraid to admit that you can't answer all their questions.
- Answer questions at a level the child can understand.
- Provide ongoing opportunities for children to talk. They will probably have more questions as time goes on.
- Use this as an opportunity to establish a family emergency plan. Feeling that there is something you can do may be very comforting to both children and adults.
- Allow children to discuss other fears and concerns about unrelated issues. This is a good opportunity to explore these issues also.
- Monitor children's television watching. Some parents may wish to limit their child's exposure to graphic or troubling scenes. To the extent possible, watch reports of the disaster with children. It is at these times that questions might arise.
- Help children understand that there are no bad emotions and that a wide range of reactions is normal.

[24] http://www.mentalhealth.samhsa.gov/publications/allpubs/KEN-01-0091/default.asp

Understanding and Working with Disaster Survivors (Continued)

- Encourage children to express their feelings to adults (including teachers and parents) who can help them understand their sometimes strong and troubling emotions.

- Try not to focus on blame.

In addition to the tragic things they see, help children identify good things, such as heroic actions, families who are grateful for being reunited, and the assistance offered by people throughout the country and the world.

5. **Traumatic stress** – The National Institute of Mental Health estimates that approximately 10% of survivors experience great distress after a disaster[25]. This may be in the immediate aftermath or in the longer-term recovery process. There is no specific pattern or time-line for feeling traumatized. Some of the traumatic responses may include problems with:

a. Cognitive functioning. Those who have suffered traumatic stress many act irrationally; have difficulty making decisions; or may act in ways that are out of character for them normally. They may have difficulty sharing or retrieving memories.

b. Physical health. Traumatic stress can cause a range of physical symptoms—from exhaustion to heat problems.

c. Interpersonal relationships. Those who survive traumatic stress may undergo temporary or long-term personality changes that make interpersonal relationships difficult.

d. The strength and type of personal reaction vary because of:

- The victim's prior experience with the same or a similar event. The emotional effect of multiple events can be cumulative, leading to greater stress reactions.

[25] National Institute of Mental Health. Innovations in Mental Health Services to Disaster Victims. Washington, D.C.: U.S. Department of Health and Human Services; Publication No. (ADM) 90-537, 1990.

Understanding and Working with Disaster Survivors (Continued)

- The intensity of the disruption in the survivors' lives. The more the survivors' lives are disrupted, the greater their psychological and physiological reactions may become.

- The meaning of the event to the individual. The more catastrophic the victim perceives the event to be to him or her personally, the more intense will be his or her stress reaction.

- The emotional well-being of the individual and the resources (especially social) that he or she has to cope. People who have had other recent traumas may not cope well with additional stressors.

- The length of time that has elapsed between the event's occurrence and the present. The reality of the event takes time to "sink in."

- You should not take the survivors' surface attitudes personally. Rescuers may expect to see a range of responses that will vary from person to person, but the responses they see will be part of the psychological impact of the event—and probably will not relate to anything that the CERT members have or have not done.

6. **Responses to Disaster Survivors** – The goal of on-scene psychological intervention on the part of CERT members should be to stabilize the incident scene by stabilizing individuals. Some ways to do this include:

a. Assess the survivors for injury and shock. Address any medical needs first. Observe them to determine their level of responsiveness and whether they pose a danger to themselves or to others.

b. Get uninjured people involved in helping. Focused activity helps to move people beyond shock, so give them constructive jobs to do, such as running for supplies. This strategy is especially effective for survivors who are being disruptive.

Understanding and Working with Disaster Survivors (Continued)

c. Listen! Let people talk about their feelings and their physical needs. Victims often need to talk about what they've been through—and they want someone to listen to them.

d. Empathize. Show by your responses that you hear their concerns. Victims want to know that someone else understands their feelings of pain and grief.

e. Help survivors connect to natural support systems, such as family, friends, or clergy.

f. Mental Health Referrals – Survivors that show evidence of being suicidal, psychotic, or unable to care for themselves should be referred to mental health professionals for support. Remember disaster mythology; this will be infrequent in most groups of survivors.

g. Avoid Un-empathic responses – When providing support, they should avoid saying the following phrases. On the surface, these phrases are meant to comfort the survivors, but they do not show an understanding of the person's feelings. These types of responses could elicit a strong negative response or distance the survivor from you. It is ok to apologize if the survivor reacts negatively to something that you said.

- "I understand." In most situations we cannot understand because our experience is not the same and rarely our social location is exactly like another's.
- "Don't feel bad." The survivor has a right to feel bad and will need time to feel differently.
- "You're strong or You'll get through this." Many survivors do not feel strong and question if they will recover from the loss.
- "Don't cry." It is ok to cry.

Understanding and Working with Disaster Survivors (Continued)

- "It's God's will." Giving religious meaning to an event to a person you do not know may insult or anger the person.

- "It could be worse" or "At least you still have …" it is up to the individual to decide whether things could be worse.

VI. Resources

A. Local, Community, State, and Federal organizations or agencies that can help you better understand disaster psychology and act as a support and referral system to you during disaster response. **Listed below are some resources, you should add local and regional community based organizations to tailor the list to your area.**

B. Federal Resources – In response to a presidentially-declared disaster, FEMA may work with up to 28 federal agencies and the American Red Cross to provide assistance. These agencies provide state and local governments with personnel, technical expertise, equipment and other resources, and assume an active role in managing the response.

To coordinate the federal efforts, FEMA recommends and the President appoints a Federal Coordinating Officer (FCO) for each state that is affected by a disaster. The FCO and the state response team set up a Disaster Field Office (DFO) near the disaster scene. It is from there that the federal and state personnel work together to carry out response and recovery functions. These functions are grouped into 12 Emergency Support Functions (ESFs), each headed by a agency supported by other agencies. The federal agencies that provide assistance include:

1. Department of Agriculture
2. Department of Commerce
3. Department of Defense
4. Department of Education
5. Department of Energy
6. Department of Health and Human Services
7. Department of Housing and Urban Development

Resources (Continued)

8. Department of the Interior
9. Department of Justice
10. Department of Labor
11. Department of State
12. Department of Transportation
13. Department of the Treasury
14. Internal Revenue Service
15. Department of Veterans Affairs
16. Agency for International Development
17. American Red Cross
18. Environmental Protection Agency
19. Federal Communications Commission
20. Federal Emergency Management Agency
21. General Services Administration
22. National Aeronautical and Space Administration
23. National Communications System
24. Nuclear Regulatory Commission
25. Office of Personnel Management
26. Office of Science and Technology Policy
27. Small Business Administration
28. Tennessee Valley Authority
29. U.S. Postal Service

C. National Organizations - that support disaster response and recovery include The National Voluntary Organizations Active in Disaster (NVOAD) which coordinates planning efforts by many voluntary organizations. Member organizations provide more effective and less duplication in service by getting together before disasters strike. Once disasters occur, NVOAD or an affiliated state VOAD encourages members and other voluntary agencies to convene on site. This cooperative effort has proven

Resources (Continued)

to be the most effective way for a wide variety of volunteers and organizations to work together in a crisis. NVOAD serves member organizations through: communication, cooperation, coordination, education, leadership, development, mitigation, convening mechanisms, and outreach. The following is a list of National VOADs.

• Adventist Community Services	• American Baptist Men
• America's Second Harvest	• American Radio Relay League, Inc.
• American Disaster Reserve	• Ananda Marga Universal Relief Team
• American Red Cross	• Christian Disaster Response
• Catholic Charities USA	• Church of the Brethren Disaster Response
• Christian Reformed World Relief Committee	• Convoy of Hope
• Church World Service	• Episcopal Relief and Development (formerly The Presiding Bishop's Fund for World Relief)
• Disaster Psychiatry Outreach	• Humane Society of the United States
• Friends Disaster Service	• International Critical Incident Stress Foundation
• International Aid	• Lutheran Disaster Response
• International Relief Friendship Foundation	• Mercy Medical Airlift: National Patient Travel Center
• Mennonite Disaster Service	• National Organization for Victim Assistance
• National Emergency Response Team	• Northwest Medical Teams International
• Nazarene Disaster Response	• REACT International, Inc.
• Presbyterian Church (USA)	• Southern Baptist Convention
• Society of St. Vincent de Paul	• The Salvation Army
• The Points of Light Foundation	• United Methodist Committee on Relief and the General Board of Global Ministries
• United Jewish Communities	• Volunteers of America
• Volunteers in Technical Assistance	•World Vision
• Wider Church Ministries, United Church of Christ	• The list continues to expand. . .

Resources (Continued)

C. State Resources – the following chart indicates active organized voluntary organizations in Tribes, States and Territories as well as the nation's capital.

• Alabama VOAD	• Alaska VOAD	• Virginia VOAD
• Arizona VOAD	• Arkansas VOAD	• West Virginia VOAD
• Calfornia Statewide Contacts	• California VOAD - North	• Wyoming VOAD
• California VOAD - South	• Colorado VOAD	• Washington State VOAD
• Connecticut VOAD	• DC VOAD - Washingrton DC	• Wisconsin VOAD
• Florida VOAD	• Georgia VOAD	
• Guam VOAD	• Hawaii VOAD	
• Idaho VOAD	• Illinois VOAD	
• Indiana VOAD	• Iowa VOAD	
• Kansas VOAD	• Kentucky VOAD	
• Louisiana VOAD	• Maine VOAD	
• Maryland VOAD	• Massachusetts VOAD	
• Michigan VOAD	• Minnesota VOAD	
• Mississippi VOAD	• Missouri VOAD	
• Montana VOAD	• Nebraska VOAD	
• Nevada VOAD	• New Hampshire VOAD	
• New Jersey VOAD	• New Mexico VOAD	
• New York City VOAD	• New York VOAD	
• North Carolina VOAD	• North Dakota VOAD	
• Ohio VOAD	• Oklahoma VOAD	
• Oregon VOAD	• Pennsylvania VOAD	
• Puerto Rico VOAD	• Red Cloud Indian School	
• Rhode Island VOAD	• South Carolina VOAD	
• South Dakota VOAD	• St. Croix VOAD	
• St. Thomas & St. John VOAD	• Tennessee VOAD	
• Texas VOAD	• Utah VOAD	
• Vermont VOAD	• Virginia - Northern Virginia VOAD (NOVAVOAD)	

Resources (Continued)

D. Local Resources – The following list is an example of local resources available in the Seattle area – Washington State Voluntary Organizations Active in Disaster Members (WAVOAD) consists of voluntary and state government organizations with disaster relief roles. VOAD functions include animal control, building repair, child care, clean up, clothing, communication, counseling, damage assessment, disaster welfare inquiry, financial assistance, food, human relations, mass care, sheltering, transportation, volunteer staffing, and warehousing and bulk distribution. There are more members that are listed below and more will likely join in at the onset of a disaster this is a sampling. WAVOAD members with web sites include:

- Adventist Community Services is a national, humanitarian agency involved in relief and community action programs. It is sponsored by the Seventh-day Adventist Church, but is separately incorporated as a public charity.
- Airport Chaplaincy is affiliated with Sea-Tac Ministries Foundation and Southcenter FOCAS
- American Red Cross is a humanitarian organization led by volunteers and guided by its Congressional Charter and the Fundamental Principles of the International Red Cross Movement, will provide relief to victims of disasters and help people prevent, prepare for, and respond to emergencies.
- Catholic Community Services of Seattle - "With one heart, we are working to build healthier families and communities across Western Washington."
- Christian Reformed World Relief Committee is a Christian non-profit agency with programs in North America and in over 30 countries world-wide, working with people and their communities to create permanent, positive change in Christ's name through development, relief, and education.
- Church World Services is the relief and development agency of the National Council of Churches of Christ in the U.S.A., responds to natural and human-caused disasters throughout the world through local partners it supports via counsel, technical assistance, training, funds, and material resources.
- REACT International is a public service organization comprised of private radio operators serving travelers and their communities alike with radio communications. Member volunteers are dedicated to improving their communities by providing voluntary, two-way communications.

Resources (Continued)

- Salvation Army - The Salvation Army is an integral part of the Christian Church, although distinctive in government and practice. The Army's doctrine follows the mainstream of Christian belief and its articles of faith emphasize God's saving purposes. Its objectives are 'the advancement of the Christian religion... of education, the relief of poverty, and other charitable objects beneficial to society or the community of mankind as a whole.
- World Relief works primarily through the local church by assisting it with economic development and health improvements, by helping it minister to refugees and migrants, and by aiding its response to disasters.
- World Vision International is a nonprofit Christian humanitarian organization committed to serving God by working with the poor and oppressed.

D. Community Resources – For individuals and families wanting to get involved beyond personal preparedness (escape plans, 3-day kits, etc.) but are not interested in joining a specific disaster response organization there are ways they can become involved at the community level:

- Community Emergency Response Training – where citizens receive training to work as a team, or become individually aware of how they can assist in disaster response efforts in their community.

- Neighborhood Watch – a program supported by local law enforcement. This neighborhood crime watch program could help you know your neighbors, gain knowledge about the structures in your area, acquaint you with people who may need special help in time of disaster and provide you with general knowledge of who lives in your immediate area.

E. Special Community Disaster Resources – Earlier in this unit we examined children and older adults as communities in need of special consideration. Resource links are provided below for each of these groups. The more you know your neighborhood, workplace, and your community the more you will discover about the needs of your friends, neighbors, co-workers and fellow citizens. We encourage you to know your community to be a better responder in a time of disaster.

Resources (Continued)

1. Resource list of groups, agencies and organizations who may offer helpful information or response assistance with children during disasters.

- American Academy of Child and Adolescent Psychiatry
- American Counseling Association
- American Psychological Association Online: Help with Trauma
- Emergency Services and Disaster Relief Branch, Center for Mental Health
- Helping Children and Adolescents Cope with Violence and Disasters
- Helping Children Cope with Disaster, National Parent Information Network
- High Schools for Heroes
- National Association of School Psychologists
- National Center for Post-Traumatic Stress Disorder
- Post-Traumatic Stress Disorder (PTSD), Trauma, Disasters, and Violence
- Talking with Children When Disaster Strikes
- Ten Tips to Help Your Kids Deal with Violence, Parenting Press
- Terrorism and Children, Purdue University Extension
- University of Oklahoma, Department of Pediatrics
- U.S. Government Information and Resources in Response to September 11th Events
- Children, Stress and Natural Disasters: A Guide For Teachers
- Oregon Fire and Emergency Services Kids Stuff
- Resources for Public Safety Education Games and image resources for education of public safety
- Suggestions for Adults Talking and Thinking with Children About the Terrorist Attacks:

Resources (Continued)

- Tornadochaser Kids Site
  Everything you could want to know about tornados, including activities and free stuff.
- PA National Weather Service Office
  Kids' Weather Page from the State College, PA National Weather Service Office.
- Sparky the Fire Dog Celebrates First Anniversary
  Sparky the official mascot of the nonprofit National Fire Protection Agency (NFPA)
- http://www.fema.gov/kids/feel.htm

2. Resource list of groups, agencies and organizations who may offer helpful information or response assistance with older adults during a disaster.

- US Department of Health & Human Services Administration on Aging. Excellent detailed page about disaster assistance for aging population. At the top of the web page, under the term “Key Topics” click on the term “disaster assistance”. http://www.aoa.gov/

- US Department of Health and Human Services, Office of Emergency Preparedness. http://oep-ndms.dhhs.gov/

- Disaster News Network
  http://www.disasternews.net/news/news.php?articleid=2248
  Federal administration on aging is proposing a project called EAGLES Elder Action Global Logistical Emergency System (peer training)

- Keep it Cool with Hot Weather Advice for Older People
  http://www.nia.nih.gov/NewsAndEvents/PressReleases/PR20010801KeepitCool.htm

- The Elderly May Have Advantage in Natural Disasters
  http://www.psychiatrictimes.com/p010133.html

- National Mental Health Association. Dealing with Stress After A Natural Disaster
  http://www.nmha.org/reassurance/naturalDisaster.cfm

Resources (Continued)

- "Most seniors are not frail, sick or dependent. . . they are resourceful and want to participate in the planning of disaster preparedness. . " City of Greater Sudbury http://www.city.greatersudbury.on.ca/content/static/nas/emergencyprep/html/elderly.cfm

- American Red Cross: Guidance and resources for consumers and professionals. http://redcross.org/more/commserv/seniors.html

- Local emergency management pages with elderly information: Putnam County Department of Emergency Services Palatka, Florida http://www.putnam-fl.com/brd/PCPS/Elderly.htm

- National Institute on Aging http://www.nia.nih.gov/

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.

2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to:

   - Read and become familiar with Unit Ten: *All Hazards* before the next session.

End of Unit Nine

Unit Ten: All Hazards

I. Unit Overview and Objectives

A. Unit Overview

1. It is important for citizens to be aware of the hazards that exist in the communities in which they live, work and socialize in. Being attentive to the potential of hazard will make people more prepared and able to respond should a disaster strike.

2. This unit is rich in information about all hazards known to exist in the States, Tribes and Territories of the United States of America. Although all hazards might not apply to your region (for example, ice storms are not likely in Miami), because of ease of travel, it is important to be aware of such dangers.

3. This unit will provide general definitions, preparation, response and recovery information for dams, earthquakes, extreme heat, floods, hazardous materials, hurricanes, landslides and debris flow (mudslides), nuclear emergencies, terrorism, thunderstorms and lighting, tornadoes, tsunamis, volcanoes, and winter storms. Each category is covered in writing; however, your CERT instruction team may only cover issues that are pertinent to your community.

Unit Overview and Objectives

B. Objectives

1. By listening, participating and interacting in class activities, by the end of this unit participants should be able to accurately:

a. Understand the characteristics of natural disasters and acts of terrorism.

b. Identify risks in their communities (to land, infrastructure, people, and society).

c. Describe actions to take before, during and following a disaster.

C. For all disasters in this unit the following information is pertinent:

1. Make sure all family members know how to respond after the disaster.

2. Teach all family members how and when to turn off gas, electricity, and water.

3. Teach children how and when to call 9-1-1, police, or fire department and which radio station to tune to for emergency information.

4. Contact your local emergency management office or American Red Cross chapter for more information on disaster preparedness in your area.

5. Have 72 hours worth of disaster supplies on hand for all household members.

6. Develop an emergency communication plan. Ask an out-of-state relative or friend to serve as the "family contact."

7. Mitigate – engage in activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Know your area, mitigate and prepare for disasters specific to your region.

8. Know what your homeowners, renters and personal insurance policies do and do not cover. Keep insurance up-to-date.

I. Dams and Dam Safety[1]

A. Dams are. . .

A dam is a barrier controlling the flow of water. It can be made of earth or concrete and built across a river or stream to obstruct or control the flow of water. There are about 80,000 dams in the United States today, the majority of which are privately owned. Other owners are state and local authorities, public utilities, and federal agencies.

B. When or where can a dam break?

Several things can cause a dam to fail: first, if they are not designed, operated and maintained property, or when major flooding overwhelms the dams capacity or structural damaged caused by people, earthquakes or other natural disasters.

C. What damage can occur from dam failure?

The energy of the water stored behind even a small dam is capable of causing loss of life and great property damage due to flooding, landslides and mudslides to people, communities or property downstream of the dam.

D. Emergency Information

The National Dam Safety Program is dedicated to protecting the lives of American citizens and their property from the risks associated with the development, operation, and maintenance of America's dams.

II. Earthquakes

A. Earthquakes are. . .

An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates.

[1] http://www.fema.gov/hazards/damsafety/

Earthquakes (Continued)

B. When and where do earthquakes occur?

1. Earthquakes strike suddenly, without warning.

2. Earthquakes can occur at any time of the year and at any time of the day or night.

3. All 50 states and all U.S. territories are vulnerable to earthquakes; 45 at moderate to very high risk and they are located in every region of the country.

4. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes—most located in uninhabited areas.

5. The largest earthquakes in the United States were along the New Madrid Fault in Missouri, where a three-month long series of quakes from 1811 to 1812 included three quakes larger than a magnitude of eight on the Richter scale. They were felt all over the entire Eastern United States.

6. Where earthquakes previously occurred they will happen again.

C. What damage can occur from an earthquake?

1. Aftershocks

   a. Always expect aftershocks after a major earthquake.

   b. Aftershocks are smaller earthquakes that follow the main shock and can cause further damage to weakened buildings.

   c. After-shocks can occur in the first hours, days, weeks, or even months after the quake.

   d. Be aware that some earthquakes are actually foreshocks, and a larger earthquake might occur.

2. Collapse buildings and bridges.

3. Disrupt gas, electric, and phone service.

4. Trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis).

Earthquakes (Continued)

5. Shake buildings from foundations.

6. Extensive property damage.

7. Death.

D. Emergency Information

1. Stay inside. The best protection during an earthquake is to get under heavy furniture such as a desk, table, or bench.

2. If outdoors: Move into the open, away from buildings, streetlights, and utility wires. Once in the open, stay there until the shaking stops.

3. If in a moving vehicle: Move to a clear area away from buildings, tree, overpasses or utility wires. Stop quickly and stay in the vehicle. Once the shaking has stopped, proceed with caution. Avoid bridges or ramps that might have been damaged by the quake.

4. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls.

5. Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects.

III. Extreme Heat

A. Extreme heat[2] is. . .

Temperatures 10 degrees or more above the average high temperature for a region and last for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall.

---

[2] http://www.fema.gov/hazards/extremeheat/heat.shtm

Extreme Heat (Continued)

B. Where does extreme heat occur and who is most at risk?

1. All areas in the United States are at risk of drought at any time of the year.

2. In a normal year, approximately 175 Americans die from extreme heat. Young children, elderly people, and those who are sick or overweight are more likely to become victims.

3. Because men sweat more than women do, men are more susceptible to heat illness because they become more quickly dehydrated.

4. Sunburn can significantly slow the skin's ability to release excess heat.

5. People living in urban areas may be at a greater risk from the effects of a prolonged heat wave than people living in rural regions. An increased health problem can occur when stagnant atmospheric conditions trap pollutants in urban areas, thus adding contaminated air to excessively hot temperatures.

C. Emergency Information

1. Heat kills by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature.

2. Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Other conditions that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality.

3. A prolonged drought can have a serious economic impact on a community. Increased demand for water and electricity may result in shortages of resources. Moreover, food shortages may occur if agricultural production is damaged or destroyed by loss of crops or livestock.

IV. Floods[3]

A. Floods are. . .

A flood is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties, at least one of which is your property from:

1. Overflow of inland or tidal waters.

2. Unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow.

3. The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood.

4. Floods can be slow, or fast rising but generally develop over a period of days.

5. Dam failures are potentially the worst flood events. A dam failure is usually the result of neglect, poor design, or structural damage caused by a major event such as an earthquake. When a dam fails, a gigantic quantity of water is suddenly let loose downstream, destroying anything in its path.

6. A Flash Flood usually results from intense storms dropping large amounts of rain within a brief period. Flash floods occur with little or no warning and can reach full peak in only a few minutes.

B. When and where do most floods occur?

Floods are the most common and widespread of all natural disasters. Tribal, State, and Territorial communities in the United States have experienced some kind of flooding, after spring rains, heavy thunderstorms, or winter snow thaws. **Your homeowners or renters insurance does not cover flood damage.**

---

[3] http://www.fema.gov/hazards/floods/

Floods (Continued)

C. Emergency Information

There are several things you can do to keep safe until water levels drop again including:

1. Fill bathtubs, sinks, and jugs with clean water in case water becomes contaminated.

2. Listen to a battery-operated radio for the latest storm information.

3. If local authorities instruct you to do so, turn off all utilities at the main power switch and close the main gas valve.

4. If told by emergency management or law enforcement personnel to evacuate your home, do so immediately!

5. If the waters start to rise inside your house before you have evacuated, retreat to the second floor, the attic, and if necessary, the roof.

6. Floodwaters may carry raw sewage, chemical waste and other disease-spreading substances. If you have been exposed to floodwaters, wash your hands with soap and disinfected water.

7. Avoid walking through floodwaters. As little as six inches of moving water can knock you off your feet.

8. Do not drive through a flooded area. If you come upon a flooded road, turn around and go another way. A car can be carried away by just 2 feet of floodwater. More people drown in their cars than anywhere else.

9. Look out for animals -- especially snakes. Animals lose their homes in floods too.

Floods (Continued)

If you are in a vehicle:

10. If your car stalls, abandon it immediately and get to higher ground. Many deaths have resulted from attempts to move stalled vehicles.

11. Stay away from downed power lines and electrical wires. Electrocution is a source of deaths in floods. Electric current passes easily through water.

12. Do not try to swim to safety; wait for rescuers to come to you get to high ground and stay there.

D. After a flood:

1. Before entering a building, inspect foundations for cracks or other damage. Do not go in if there is any chance of the building collapsing.

2. Upon entering the building, do not use matches, cigarette lighters or any other open flames, since gas may be trapped.

3. Keep power off until an electrician has inspected your system for safety.

4. Floodwaters pick up sewage and chemicals from roads, farms and factories. Protect your health by cleaning right away. Throw out foods and medicines that have met floodwater.

5. Until local authorities proclaim your water supply to be safe, boil water for drinking and food preparation vigorously for five minutes before using.

6. Be careful walking around. After a flood, steps and floors are often slippery with mud and covered with debris, including nails and broken glass.

7. Take steps to reduce your risk of future floods. Make sure to follow local building codes and ordinances when rebuilding, and use flood-resistant materials and techniques to protect yourself and your property from future flood damage.

V. Hazardous Materials[4]

A. Hazardous materials are. . .

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals are used in industry, agriculture, medicine, research, and consumer goods. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released because of transportation accidents or because of chemical accidents in plants.

B. When and where do most hazardous materials disasters occur?

1. Between 1982 and 1991, there was an annual average of 6,774 hazardous materials transportation incidents. In 1991, 9,069 transportation incidents resulted in 10 deaths and 436 injuries.

2. Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores.

3. Modes of transportation experiencing incidents involving hazardous materials included air, highway, railway, waterways and pipelines.

C. What damage can be caused by hazardous material disasters?

1. Serious injury.
2. Death.
3. Long-lasting health effects.
4. Damage to buildings, homes and other property.
5. Interruption of travel and commerce.

---

[4] http://www.fema.gov/hazards/hazardousmaterials/hazmat.shtm

Hazardous Materials (Continued)

D. Emergency Information

1. During a Hazardous Materials Disaster:

   a. If you hear a siren or other warning signal, turn on a radio or television for further emergency information.

   b. If you see an accident, call 9-1-1 or the local fire department to report the nature and location of the accident as soon as possible.

   c. Move away from the accident scene and help keep others away. Do not walk into or touch any of the spilled substance. Try not to inhale gases, fumes and smoke. If possible, cover mouth with a cloth while leaving the area.

   d. Stay away from accident victims until the hazardous material has been identified.

   e. Try to stay upstream, uphill and upwind of the accident.

2. <u>If asked to stay indoors by authorities</u>

   In Place Sheltering –

   a. Bring pets inside.

   b. Seal house so contaminants cannot enter.

   c. Close and lock windows and doors.

   d. Seal gaps under doorways and windows with wet towels and duct tape.

   e. Seal gaps around window and air conditioning units, bathroom and kitchen exhaust fans, and stove and dryer vents with duct tape and plastic sheeting, wax paper or aluminum wrap.

   f. Close fireplace dampers.

Hazardous Materials (Continued)

g. Close off nonessential rooms such as storage areas, laundry rooms and extra bedrooms.

h. Fill up bathtubs or large containers for an additional water supply.

i. Turn off ventilation systems.

j. Monitor the Emergency Broadcast System station for further updates and remain in shelter until authorities indicate it is safe to come out.

3. Authorities decide if evacuation is necessary based primarily on the type and amount of chemical released and how long it might affect an area. <u>If asked to evacuate</u>:

a. Stay tuned to a radio or television for information on evacuation routes, temporary shelters, and procedures.

b. Follow the routes recommended by the authorities--shortcuts may not be safe. Leave at once.

c. If you have time, minimize contamination in the house by closing all windows, shutting all vents, and turning off attic fans.

d. Take pre-assembled disaster supplies.

e. Remember to help your neighbors who may require special assistance--infants, elderly people and people with disabilities.

4. <u>Returning home after a hazardous materials disaster</u>:

a. Return home only when authorities say it is safe.

b. Follow local instructions concerning the safety of food and water.

c. Clean up and dispose of residue carefully. Follow instructions from emergency officials concerning clean-up methods.

VI. Hurricanes[5]

A. Hurricanes are. . .

1. A hurricane is a tropical storm with winds that have reached a constant speed of 74 miles per hour or more. Hurricane winds blow in a large spiral around a relative calm center known as the "eye." The "eye" is generally 20 to 30 miles wide, and the storm may extend outward 400 miles.

2. As a hurricane approaches, the skies will begin to darken and winds will grow in strength. As a hurricane nears land, it can bring torrential rains, high winds, and storm surges. A single hurricane can last for more than 2 weeks over open waters and can run a path across the entire length of the eastern seaboard.

B. When and where do hurricanes occur?

1. August and September are peak months during the hurricane season, which lasts from June 1 through November 30.

2. Hurricanes form in open waters and come inland from the shore.

C. Damage caused by a hurricane can include:

1. Death.

2. Serious injury.

3. Infrastructure damage.

4. Severe damage or destruction of homes, business and other property.

5. Interruption of travel and commerce.

[5] **http://www.fema.gov/hazards/hurricanes/**

Hurricanes (Continued)

D. Emergency Information

1. During a Hurricane Warning – issued when hurricane conditions are expected in 24 hours or less (e.g. winds of 74 miles per hour or greater or dangerously high water and rough seas).

a. Listen constantly to a battery-operated radio or television for official instructions. If in a mobile home, check tie-downs and evacuate immediately.

b. Avoid elevators.

c. If at home:

- Stay inside, away from windows, skylights, and glass doors.
- Keep a supply of flashlights and extra batteries handy. Avoid open flames, such as candles and kerosene lamps, as a source of light.
- If power is lost, turn off major appliances to reduce power "surge" when electricity is restored.

d. If officials indicate evacuation is necessary:

- Leave as soon as possible. Avoid flooded roads and watch for washed-out bridges.
- Secure your home by unplugging appliances and turning off electricity and the main water valve.
- Tell someone outside the storm area where you are going.
- If time permits, and you live in an identified surge zone, elevate furniture to protect it from flooding or better yet, move it to a higher floor.
- Take pre-assembled emergency supplies, warm protective clothing, blankets and sleeping bags to shelter.
- Lock up home and leave.

Hurricanes (Continued)

2. After the hurricane:

a. Return home only after authorities advise that it is safe to do so.

b. Avoid loose or dangling power lines and report them immediately to the Power Company, police, or fire department.

d. Enter your home with caution. Beware of snakes, insects, and animals driven to higher ground by floodwater.

e. Open windows and doors to ventilate and dry your home.

f. Check refrigerated foods for spoilage.

g. Take pictures of the damage, both to the house and its contents for insurance claims.

h. Drive only if absolutely necessary and avoid flooded roads and washed-out bridges.

i. Use telephone only for emergency calls.

VII. Landslides and Mudslides (Debris Flow)[6]

A. Landslides and mudslides are. . .

1. Landslides are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompanies these events. Some landslides move slowly and cause damage gradually, whereas others move so rapidly that they can destroy property and take lives suddenly and unexpectedly. Gravity is the force driving landslide movement.

2. Mudflows (or debris flows) are rivers of rock, earth, and other debris saturated with water.

[6] http://www.fema.gov/hazards/landslides/

Landslides and Mudslides (Continued)

B. When and where do they occur?

1. Landslides and debris flow are a serious geologic hazard common to almost every state in the United States.

2. Landslides – Factors that allow the force of gravity to overcome the resistance of earth material to landslide movement include: saturation by water, steep slopes caused by erosion or construction, alternate freezing or thawing, earthquake shaking, and volcanic eruptions. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate landslides.

3. Mudflows – Develop when water rapidly accumulates in the ground, such as during heavy rainfall or rapid snowmelt, changing the earth into a flowing river of mud or "slurry." A slurry can flow rapidly down slopes or through channels, and can strike with little or no warning at avalanche speeds. A slurry can travel several miles from its source, growing in size as it picks up trees, cars, and other materials along the way.

C. What damage can be caused by landslides and mudflows?

1. Death - from 25 to 50 deaths annually.

2. Serious injury.

3. Infrastructure damage.

4. Severe damage or destruction of homes, business and other property - is estimated that nationally they have caused almost $2 billion in damages.

5. Interruption of travel and commerce.

Landslide and Mudslides (Continued)

D. Emergency Information

1. Prepare before intense storms by:

- a. Becoming familiar with the land around you. Learn whether landslides and debris flows have occurred in your area by contacting local officials, state geological surveys or departments of natural resources, and university departments of geology. Knowing the land can help you assess your risk for danger.

- b. Watch the patterns of storm-water drainage on slopes near your home, and especially the places where runoff water converges, increasing flow over soil-covered slopes. Watch the hillsides around your home for any signs of land movement, such as small landslides or debris flows, or progressively tilting trees. Watching small changes could alert you to the potential of a greater landslide threat.

2. During a land or mudslide:

a. If inside a building: stay inside and take cover under a desk, table, or other piece of sturdy furniture.

b. If outdoors:

- Try and get out of the path of the landslide or mudflow.
- Move quickly to the nearest high ground in a direction away from the path.
- If rocks and other debris are approaching, run for the nearest shelter such as a group of trees or a building.
- If escape is not possible, curl into a tight ball and protect your head.

Landslide and Mudslides (Continued)

c. After a land or mudslide:

- Stay away from the slide area .There may be danger of additional slides.
- Listen to a battery-operated radio or television for the latest emergency information.
- Remember that flooding may occur after a mudflow or a landslide.
- Check for damaged utility lines. Report any damage to the utility company.
- Check the building foundation, chimney, and surrounding land for damage.
- Replant damaged ground as soon as possible since erosion caused by loss of ground cover can lead to flash flooding.
- Seek the advice of geotechnical expert for evaluating landslide hazards or designing corrective techniques to reduce landslide risk.

VIII. Nuclear Energy Emergency

A. A nuclear energy emergency is. . .

Nuclear physics is the study of the nucleus of an atom. Scientific nuclear power comes from utility plants that produce energy through fission or fusion from the nucleus of an atom. Such plants produce fuel rods containing radiation which must be stored as waste products for millions of years. Nuclear weapons produce nuclear explosions that release radiation and can cause items they come in contact with to be destroyed or become radioactive.

The United States government requires commercial nuclear power plants within their borders to have both onsite and offsite emergency response plans.

Nuclear Energy (Continued)

B. When and where could a nuclear emergency happen?

1. At a nuclear power plant.
2. In the environment and communities surrounding a nuclear power plant.
3. On the road or railways which transport nuclear weapons or waste.
4. At the storage facilities for nuclear waste.
5. In the environment and communities surrounding a nuclear waste storage facility.
6. In the production plants for military equipment.
7. Anyplace where military weapons containing nuclear power are stored or used.

C. What damage can occur from exposure to nuclear energy?

1. Death.
2. Long-term illness.
3. Destruction of environment, infrastructure and human property.

D. Emergency Information

1. Before a disaster:

a. Know the site-specific emergency response plans.

b. Keep educated on information regarding plants, transportation and storage facilities in your area.

c. Monitor the Alert and Notification System and Emergency Alert Systems.

d. Be prepared to respond to an alert, general or site area emergency.

Nuclear Energy (Continued)

2. If you are advised to evacuate the area:

   a. Stay calm and do not rush.

   b. Listen to emergency information.

   c. Close and lock windows and doors.

   d. Turn off air conditioning, vents, fans, and furnace.

   e. Close fire place dampers.

   f. Use your own transportation or make arrangements to ride with a neighbor. Keep car windows and air vents closed and listen to an EAS radio station.

   g. Public transportation should be available for those who have not made arrangements.

   h. Follow the evacuation routes provided. If you need a place to stay, congregate care information will be provided.

3. If advised to remain at home:

   a. Bring pets inside.

   b. Close and lock windows and doors.

   c. Turn off air conditioning, vents, fans and furnace.

   d. Close fireplace dampers.

   e. Go to the basement or other underground area.

   f. Stay inside until authorities say it is safe.

IX. Terrorism[7]

A. Terrorism is. . .

Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom. Terrorists often use threats to create fear among the public, to try to convince citizens that their government is powerless to prevent terrorism, and to get immediate publicity for their causes.

B. When and where can terrorism happen?

Terrorist attacks can occur anywhere with or without warning.

C. What damage can occur from terrorism?

1. Terrorist attacks can result in:

    a. Mass casualties.

    b. Loss of critical resources.

    c. Disruption of vital services.

    d. Disruption of the economy.

    e. Individual and/or mass panic.

2. Terrorist Weapons – Experts generally agree that there are five categories of possible terrorist weapons. The acronym B-NICE will help you to remember. The weapons thought to be available to at least some terrorist groups include:

    a. **B**iological weapons – Biological agents are found in nature. However some countries, groups and individuals have devised ways to make biological agents into weapons so that they can be disseminated to affect broad segments of the human or animal populations or crops. Some biological agents are contagious, but many are not. Routes of exposure for biological weapons are: inhalation, ingestion, absorption.

[7] http://www.fema.gov/hazards/terrorism/terrorf.shtm

Terrorism (Continued)

b. **N**uclear weapons and radiological dispersal devices – A terrorist attack with a nuclear weapon would be much different from an attack with a conventional explosive device. There would be potential for physical injury and death to persons who were not injured in the initial attack. The affected area would be much larger than in a conventional attack, and debris and other usually harmless items would be contaminated. The long-term health effects would be more difficult to ascertain and manage. Fortunately, experts believe that the complexities of a terrorist group obtaining a nuclear weapon and maintaining the tolerances that are required for the weapon to function make the use of nuclear weapons by terrorist groups a low risk.

- Radiation dispersal devices (RDDs) are considered to be a much higher threat because radiological materials are much easier to obtain than enriched nuclear materials and the technology required to detonate an RDD is similar to that involved in detonating conventional explosives.

c. **I**ncendiary devices –Incendiary devices are mechanical, electrical, or chemical devices used intentionally to initiate combustion and start a fire. Incendiary devices consist of three basic components:

- An igniter or fuse.
- A container or body.
- An incendiary material or filler.

Incendiary devices are relatively easy to make. A device containing a chemical incendiary would usually be metal or other non-breakable material (but not plastic because many chemicals are corrosive); a device containing a liquid incendiary material would usually be a breakable material such as glass.

Terrorism (Continued)

d. **C**hemical weapons – Unlike biological agents or nuclear materials, which are difficult to produce or purchase, the ingredients used to produce chemical weapons are found in common products and petrochemicals. Terrorists can turn these common products into lethal weapons. There are five categories of chemical weapons:

- Blister agents cause blisters, burns, and other tissue damage. Exposure may be made through liquid or vapor contact with any exposed skin, inhalation, or ingestion.
- Blood agents are absorbed into the bloodstream and deprive blood cells of oxygen. Exposure may be made through liquid or vapor contact with any exposed skin, inhalation, or ingestion.
- Choking agents attack the lungs. Following exposure through inhalation, the lungs fill with fluid, which prevents oxygen from being absorbed by, and carbon dioxide from being removed from, the blood.
- Nerve agents affect the central nervous system. These agents act most quickly and are the most lethal of all chemical agents, acting within seconds of exposure.
- Riot-control agents cause respiratory distress and tearing and are designed to incapacitate rather than kill. Riot-control agents cause intense pain, especially in the moist areas of the body.

e. **E**xplosive devices – Can be classified into two types:

- Conventional explosives include: grenades, mortars, and shoulder-fired surface-to-air missiles.
- Improvised explosive devices include any device that is created in an improvised manner, incorporating explosives or other materials designed to destroy, disfigure, distract, or harass.

Terrorism (Continued)

D. Emergency Information – Some of the steps for preparing for a terrorist incident are the same as for natural hazards but some require special planning.

1. The steps to take to prepare for a terrorist attack include:

a. Assembling a disaster supply kit.

b. Identifying a safe room in the home or workplace and a meeting place outside of the home or workplace.

2. Procedures for sheltering in place during a chemical or biological attack include:

a. Shutting off the ventilation system and latching all doors and windows to reduce airflow from the outside.

b. Using pre-cut plastic sheeting to cover openings where air can enter the room, including doors, windows, vents, electrical outlets, and telephone outlets.

c. Taping the plastic sheeting around all doors and windows using duct tape to ensure a good seal.

d. Seal with duct tape other areas where air can come in, such as under doors and areas where pipes enter the home. Air can be blocked by placing towels or other soft objects in areas where air could enter, then securing them with duct tape.

e. Listen to a battery-powered radio for the all clear. Chemicals used in an attack will be carried on the wind and will dissipate over time. Listen to the Emergency Alert System broadcasts to know when it is safe to leave the safe room.

Terrorism (Continued)

3. There are special terms emergency management personnel will use during a terrorism incident including:

a. The hot zone includes the incident scene and the contaminated area around the scene. If the incident is outdoors, the hot zone will spread downwind, taking wind speed into consideration.

b. The warm zone is upwind from the hot zone and is used to isolate victims during decontamination. It is called the warm zone because the evacuees can carry or spread a contaminant into this area. Professional responders will hold those who require decontamination in the warm zone until decontamination is complete so that contaminants do not spread.

c. The cold zone is located upwind and beyond the warm zone. Those who are not contaminated or who have been decontaminated will be evacuated to the cold zone and kept there until professional responders authorize them to leave.

X. Thunderstorms and Lightning[8]

A. Thunderstorms and Lightning are. . .

1. A thunderstorm is formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as a warm and cold front, a sea breeze or a mountain. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters or in lines. Thus, it is possible for several thunderstorms to affect one location in the course of a few hours. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time. Thunderstorms can bring heavy rains (which can cause flash flooding), strong winds, hail, lightning and tornadoes.

[8] http://www.fema.gov/hazards/thunderstorms/thunder.shtm

Thunderstorms and Lightning (Continued)

2. Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder.

B. When and where could Thunderstorms and Lightning happen?

1. At any given moment, nearly 1,800 thunderstorms are in progress over the surface of the earth.

2. On average, the United States gets 100,000 thunderstorms each year. Approximately 1,000 tornadoes develop from these storms.

3. While thunderstorms and lightning can be found throughout the United States, they are most likely to occur in the central and southern states. The state with the highest number of thunderstorm days is Florida.

4. It is a myth that lightning never strikes twice in the same place. In fact, lightning will strike several times in the same place in the course of one discharge.

C. What damage can occur from Thunderstorms and Lightning?

1. Death or Serious Injury – More deaths from lightning occur on the East Coast.

2. Infrastructure damage – especially to power sources and straight-line winds exceeding 100 mph are responsible for most thunderstorm damage.

3. Severe damage or destruction of homes, business and the environment. The power of lightning's electrical charge and intense heat can electrocute on contact, split trees, ignite fires and cause electrical failures. Large hail results in nearly $1 billion in damage to property and crops. Approximately $100 million in annual losses result from forest and building fires caused by lightning. Approximately 10,000 forest fires are started each year by lightning.

Thunderstorms and Lightning (Continued)

D. Emergency Information – Thunderstorms and Lightning

1. Thunderstorms can bring heavy rains (which can cause flash flooding), strong winds, hail, lightning and tornadoes. In a severe thunderstorm get inside a sturdy building and stay tuned to a battery-operated radio for weather information.

2. Lightning is a major threat during a thunderstorm. In the United States between 75 to 100 Americans are hit and killed each year by lightning. If you are caught outdoors, avoid natural lightning rods such as tall, isolated trees in an open area or the top of a hill and metal objects such as wire fences, golf clubs and metal tools.

XI. Tornadoes

A. Tornados are. . .

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Danger signs include:

1. An approaching cloud of debris can mark the location of a tornado even if a funnel is not visible.

2. Before a tornado hits, the wind may die down and the air may become very still.

B. When and where could a tornado happen?

1. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

2. When a tornado is coming, you have only a short amount of time to make life-or-death decisions. Advance planning and quick response are the keys to surviving a tornado.

3. Tornado season is generally March through August, although tornadoes can occur at any time of year. They tend to occur in the afternoons and evenings: over 80 percent of all tornadoes strike between noon and midnight.

Tornadoes (Continued)

C. What damage can occur from tornadoes?

1. Death.
2. Serious injury..
3. Infrastructure damage.
4. Severe damage or destruction of homes, business and other property.
5. Interruption of travel and commerce.

D. Emergency Information –

1. A tornado watch is issued by the National Weather Service when tornadoes are possible in your area. Remain alert for approaching storms. This is time to remind family members where the safest places within your home are located, and listen to the radio or television for further developments.
2. A tornado warning is issued when a tornado has been sighted or indicated by weather radar.
3. Mobile homes are particularly vulnerable. A mobile home can overturn very easily even if precautions have been taken to tie down the unit. When a tornado warning is issued, take shelter in a building with a strong foundation. If shelter is not available, lie in ditch or low-lying area a safe distance away from the unit.
4. What to do during a tornado:

    a. If at home:

    - If you have a tornado safe room or engineered shelter, go there immediately.
    - Go at once to a windowless, interior room; storm cellar; basement; or lowest level of the building.
    - If there is no basement, go to an inner hallway or a smaller inner room without windows, such as a bathroom or closet.

Tornadoes (Continued)

- Get away from the windows.
- Get under a piece of sturdy furniture such as a workbench, heavy table or desk and hold on to it.
- Use arms to protect head and neck.
- If in a mobile home, get out and find shelter elsewhere.

b. If at work or school

- Go to the area designated in your tornado plan.
- Avoid places with wide-span roofs such as auditoriums, cafeterias, large hallways, or shopping malls.
- Get under a piece of sturdy furniture such as a workbench, heavy table or desk and hold on to it.
- Use arms to protect head and neck.

c. If outdoors

- If possible, get inside a building.
- If shelter is not available or there is no time to get indoors, lie in a ditch or low-lying area or crouch near a strong building. Be aware of the potential for flooding.
- Use your arms to protect your head and neck.

d. If in a car

- Never try to out-drive a tornado in a car or truck.
- Get out of the car immediately and take shelter in a nearby building.
- If there is no time to get indoors, get out of the car and lie in a ditch or low-lying area away from the vehicle. Be aware of the potential for flooding.

XII. Tsunami[9]

A. Tsunamis are. . .

A tsunami (pronounced “soo-nahm'ee”) is a series of waves generated by an undersea disturbance such as an earthquake. From the area of the disturbance, the waves will travel outward in all directions, much like the ripples caused by throwing a rock into a pond. The time between wave crests may be from 5 to 90 minutes, and the wave speed in the open ocean will average 450 miles per hour.

Tsunamis reaching heights of more than 100 feet have been recorded. As the waves approach the shallow coastal waters, they appear normal and the speed decreases. Then as the tsunami nears the coastline, it may grow to great height and smash into the shore, causing much destruction.

B. When and where could a tsunami happen?

Tsunamis can originate hundreds or even thousands of miles away from coastal areas. The range of damage can go in-land for many miles. Areas at greatest risk are less than 50 feet above sea level and within one mile of the shoreline. Local geography may intensify the effect of a tsunami.

In the United States parts of Alaska, California, Hawaii, Oregon and Washington states have been damaged by tsunamis.

C. What damage can occur from a tsunami?

1. Death – Most deaths during a tsunami are a result of drowning.
2. Serious injury.
3. Infrastructure damage.
4. Severe damage or destruction of homes, business and other property – associated risks include flooding, polluted water supplies, and damaged gas lines.
5. Interruption of travel and commerce.

[9] **http://www.fema.gov/hazards/tsunamis/tsunami.shtm**

Tsunami (Continued)

D. Emergency Information –

1. Before a tsunami:

- Find out if your home is in a danger area. Know the height of your street above sea level and the distance of your street from the ocean shore.

- Make evacuation plans. Pick an inland location that is elevated. After an earthquake or other natural disaster, roads in and out of the vicinity may be blocked, so pick more than one evacuation route

2. During a tsunami:

- Listen to a radio or television to get the latest emergency information, and be ready to evacuate if asked to do so.

- If you hear an official tsunami warning or detect signs of a tsunami, evacuate at once. Climb to higher ground. A tsunami warning is issued when authorities are certain that a tsunami threat exists.

- Stay away from the beach. Never go down to the beach to watch a tsunami come in. If you can see the wave you are too close too escape it.

- Return home only after authorities advise it is safe to do so. A tsunami is a series of waves. Do not assume that one wave means that the danger over. The next wave may be larger than the first one. Stay out of the area.

XIII. Volcanoes[10]

A. Volcanos are. . .

A volcano is a mountain that opens downward to a reservoir of molten rock below the surface of the earth. Unlike most mountains, which are pushed up from below, volcanoes are built up by an accumulation of their own eruptive products lava, ash flows, as well as airborne ash and dust. When pressure from gases and the molten rock becomes strong enough to cause an explosion, eruptions occur. Gases and rock shoot up through the opening and spill over, or fill the air with lava fragments. Volcanic products are used as building or road-building materials, as abrasive and cleaning agents, and as raw materials for many chemical and industrial uses. Lava ash makes soil rich in mineral nutrients.

B. When and where could a volcano eruption happen?

In the United States, volcanic eruptions are most likely in the Pacific Rim states of Hawaii, Alaska, Washington, Oregon, and California. The chance of eruptions that could damage populated areas is the greatest for the active volcanoes of Hawaii and Alaska.

The danger area around a volcano covers approximately a 20-mile radius. Some danger may exist 100 miles or more from a volcano, leaving Montana and Wyoming at risk.

C. What damage can occur from a volcano eruption?

1. Death – from the lava flow or from inhalation of too much ash.
2. Serious injury.
3. Infrastructure damage.
4. Severe damage or destruction of homes, business and other property – an erupting volcano can also trigger tsunamis, flash floods, earthquakes, rock falls, and mudflows.
5. Interruption of travel and commerce.

[10] http://www.fema.gov/hazards/volcanoes/volcano.shtm

Volcanoes (Continued)

D. Emergency Information –

1. Before a volcano erupts:

- Volcanic eruptions can hurl hot rocks for at least 20 miles. Floods, airborne ash, or noxious fumes can spread 100 miles or more. If you live near a known volcano, active or dormant, be ready to evacuate at a moment's notice.
- Learn about your community warning systems.
- Be prepared for these disasters that can be spawned by volcanoes.
  - Earthquakes
  - Flash floods
  - Landslides and mudflows
  - Thunderstorms
  - Tsunamis
- Make evacuation plans. You want to get to high ground away from the eruption. Plan a route out and have a backup route in mind.

2. During an eruption:

- Seek high ground.
- Protect eyes (with goggles if possible) and mouth (use a throw-away breathing mask.
- Protect yourself from lateral blasts – Sideways directed volcanic explosions, known as "lateral blasts," can shoot large pieces of rock at very high speeds for several miles. These explosions can kill by impact, burial, or heat. They have been known to knock down entire forests. The majority of deaths attributed to the Mount St. Helens volcano eruption in 1980 were a result of lateral blast and tree blow-down.

XIV. Winter Storms[11]

A. Winter storms are. . .

When cold weather turns severe (x degrees below normal temperatures for winter months) and excessive amounts of ice and snow falls, a winter storm is at hand. Three fundamental elements of a winter storm include: watches and warnings, wind chill factors and blizzard conditions.

1. A winter storm may feel colder than the actual temperature indicates due to wind chill. "Wind chill" is a calculation of how cold it feels outside when the effects of temperature and wind speed are combined.

2. Winter Storm Watches and Warnings – A winter storm watch indicates that severe winter weather may affect your area. A winter storm warning indicates that severe winter weather conditions are definitely on the way.

3. A blizzard warning means that large amounts of falling or blowing snow and sustained winds of at least 35 miles per hour are expected for several hours.

B. When and where could a winter storm happen?

Winter storms tend to happen in the months of October through April in colder climates.

C. What damage can occur from winter storms?

1. Death – occurs not only from the cold, but from unsafe measures people take to keep warm. Alcohol and caffeine can dehydrate the body. Kerosene heaters can cause fires. Charcoal fires without ventilation can cause suffocation.

2. Serious injury – frostbite (a severe reaction to cold exposure) can permanently damage the skin and bones of victims. Hypothermia (when body temperature drops to less than 90 degrees Fahrenheit) can cause shivering, slow speech, memory lapses, stumbling, drowsiness and exhaustion.

---

[11] http://www.fema.gov/hazards/winterstorms/stormsf.shtm

Winter Storms (Continued)

3. Infrastructure damage.

4. Severe damage or destruction of homes, business and other property.

5. Interruption of travel and commerce.

D. Emergency Information –

1. If Indoors:

- Stay indoors and dress warmly.
- Conserve fuel.
- Lower the thermostat to 65 degrees during the day and 55 degrees at night.
- Close off unused rooms.
- If the pipes freeze, remove any insulation or layers of newspapers and wrap pipes in rags. Completely open all faucets and pour hot water over the pipes, starting where they were most exposed to the cold (or where the cold was most likely to penetrate).
- Listen to the radio or television to get the latest information.

2. If Outdoors:

- Dress warmly.
- Wear loose-fitting, layered, light-weight clothing.
- Layers can be removed to prevent perspiration and chill.
- Outer garments should be tightly woven and water repellant.
- Mittens are warmer than gloves because fingers generate warmth when they touch each other.

Winter Storms (Continued)

- Stretch before you go out. If you go out to shovel snow, do a few stretching exercises to warm up your body. Also take frequent breaks.

- Cover your mouth. Protect your lungs from extremely cold air by covering your mouth when outdoors. Try not to speak unless absolutely necessary.

- Avoid overexertion. Cold weather puts an added strain on the heart. Unaccustomed exercise such as shoveling snow or pushing a car can bring on a heart attack or make other medical conditions worse. Be aware of symptoms of dehydration.

- Watch for signs of frostbite and hypothermia.

- Keep dry. Change wet clothing frequently to prevent a loss of body heat. Wet clothing loses all of its insulating value and transmits heat rapidly.

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.

2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to come prepared to participate in the class review and final exercise.

End of Unit Ten